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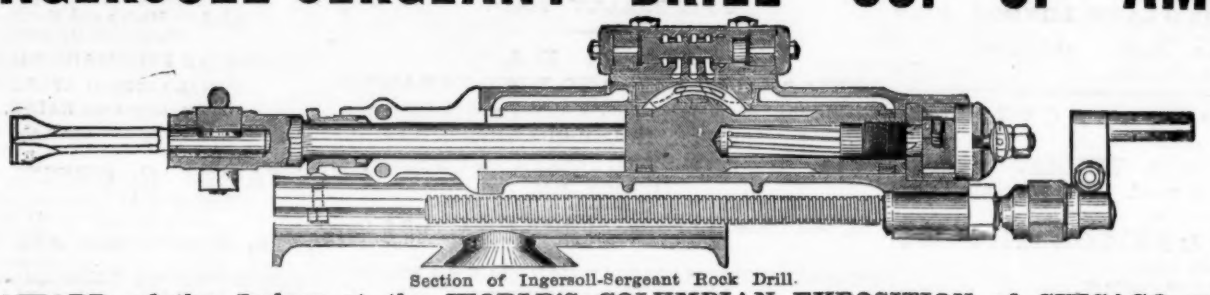

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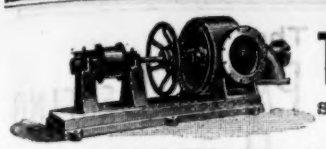

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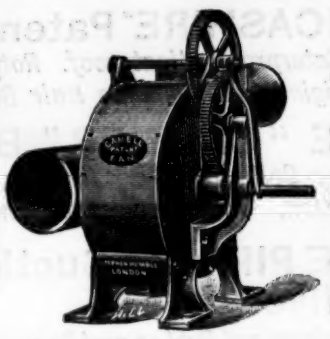

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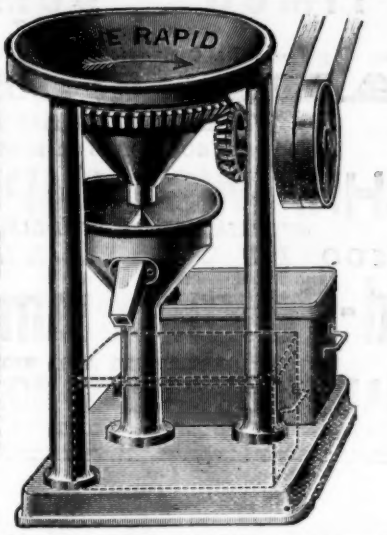

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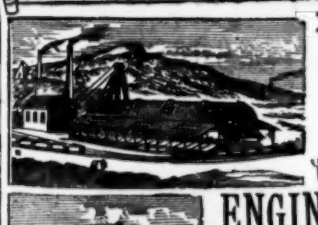

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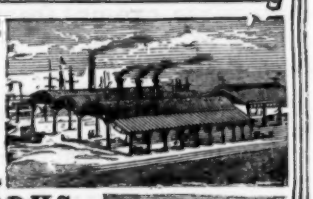

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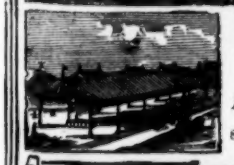

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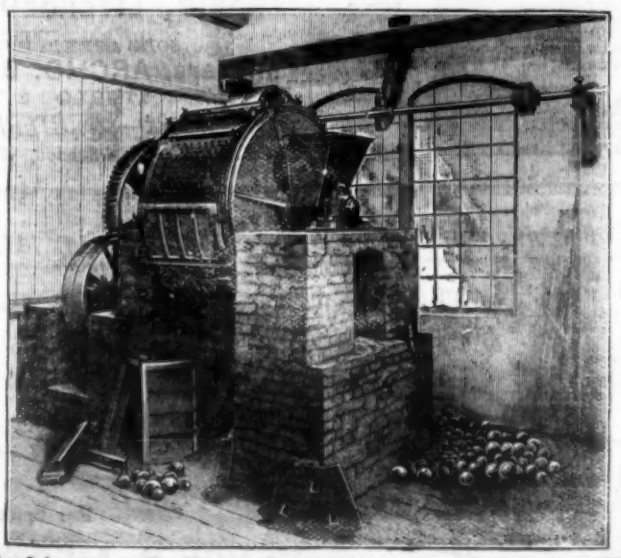

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Of Special Make and Superior Quality,

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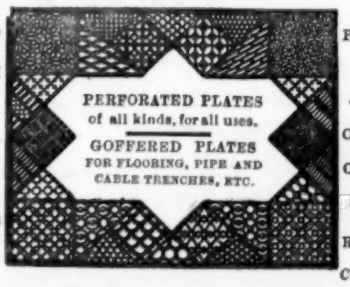

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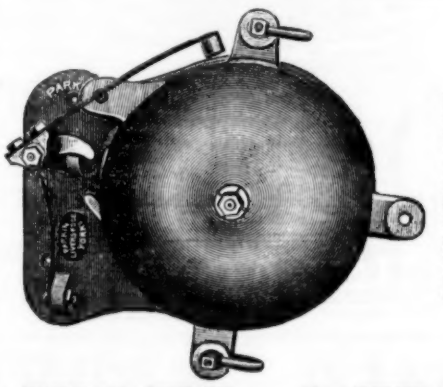

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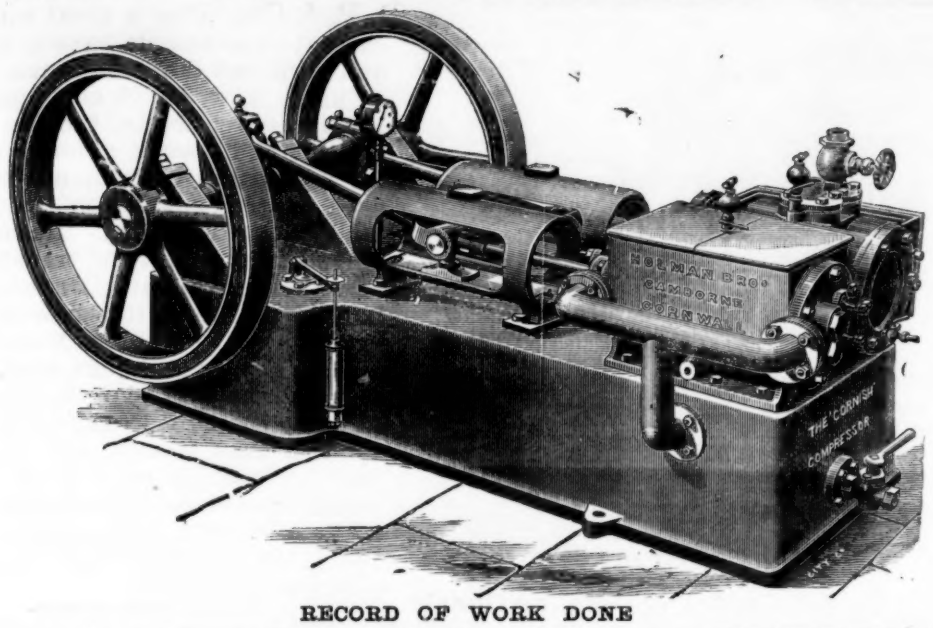

RECORD OF WORK DONE

At Botallack Mine, St. Just, Cornwall, **TWELVE MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** drove, sunk, and rose **288 FATHOMS** in **12 MONTHS**, equal to five times the Speed of Hand Labour

At Wheal Grenville Mine, Camborne, Cornwall, **SIX MEN** with **TWO** new Patent **CORNISH ROCK DRILLS** started from the **150 FATHOMS** level and put up in **EIGHT MONTHS** a **11 FEET** by **5 FEET PERPENDICULAR RISE 46 FATHOMS 5 FEET 6 INCHES**, and about midway drove **1 FATHOM 5 FT.** No communication of any kind was effected until holing to the Shaft brought down from surface.

Estimates for ROCK BORING PLANT and GENERAL MINING MACHINERY on Application.

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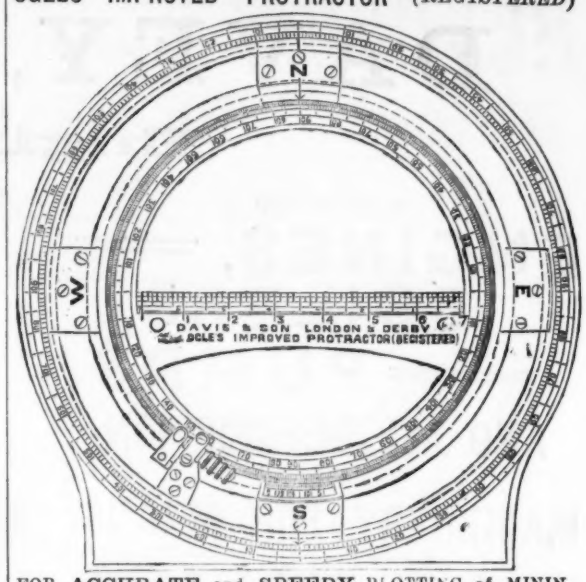

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GOLD MEDAL, Inventions Exhibition, 1885
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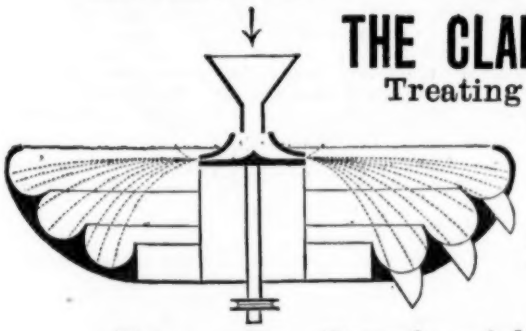
Highest Award at the Mining Exhibition, 1890.

DRY CONCENTRATION.



THE CLARKSON-STANFIELD CONCENTRATOR (LIMITED), are successfully

Treating the ores of Gold, Silver, Copper, Lead, Tin, Zinc, Cobalt, &c., &c. of all degrees of fineness, from 30 to the finest meshes by their NEW MACHINERY which may be seen in operation at

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Homogeneous substances, such as Emery, Glass, Sand, Sulphur, Black Lead, &c., graded according to size in one operation.

Terms for Experimental Concentration, and for Supply of Machines on Application.

NEW PATENTS.

LIST of APPLICATIONS for New Patents relating to Mining Metallurgical, Engineering, Railway and kindred matters, specially compiled from official sources for the "Mining Journal" by Messrs. Rayner and Company, Patent Agents, 37, Chancery Lane, London, W.C., who will forward all information regarding them free on application.

3931 Claude Warner, Wormley, near Broxburne, Herts.—Apparatus for preventing the bursting of boilers or other vessels.—February 12.
3997 Arthur Henry Barker, 121, Belle vue Road, Leeds.—Improvements in or relating to steam engine governors.—February 12.
30:1 William Bruce Thomson, 41, Reform Street, Dundee.—Improvements in the construction of iron and steel vessels.—February 12.
3069 James Cladwell, 87, St. Vincent Street, Glasgow.—Improvements in steering engines.—February 13.
3091 John Derbyshire, 18, Southampton Buildings, Chancery Lane, London.—Improvements in steam boilers.
3094 Peter Carmeil Buan and Emilo Zoccani, 5, Queen Victoria Street, London.—An improved means for concentrating metallic ores.—February 13.
3099 James Roots, 261, High Holborn, London.—Improvements in mechanism for changing the speed of and reversing rotation.—February 14.
3102 Fred George Whitehead, 46, Lincoln's Inn Fields, London.—Improvements in or relating to kitchen boilers.—February 13.
3122 John Albert Weyland, 4, South Street, Finsbury, London.—Improvements in vaporisers for petroleum motors.—February 13.
3145 John Parry Jones, Rosle Bank, Heaton Terrace, Ashton-under-Lyne.—The improvement in power hammers.—February 14.
3171 George Culpan, 4, Derby Terrace, Rawtenstall, Lancs.—Improvements in steam traps.—February 14.
3191 Alexander Turnbull, 62, St. Vincent Street, Glasgow.—Improved means for facilitating circulation of water in steam boilers.—February 14.
3224 James Morgan White, 46, Lincoln's Inn Fields, London.—Improvements in the manufacture of steel or iron plates and apparatus thereof.—February 14.
3257 Archibald Sharp and William Carlile Wallace, 154, St. Vincent Street, Glasgow.—Improved thrust bearing.—February 15.
3258 Alfred Robert Kay, 4, St. Ann's Square, Manchester.—Improvements in steam boilers or generators, and the like.—February 15.
3299 Joseph Gérard and Bernard Hubsch, 70, Chancery Lane, London.—Improvements in couplings for flanged pipes and the like.—February 15.
3302 John Emmett Lawrence, 4, South Street, Finsbury, London.—Improvements in connection with centrifugal pumping machinery.—February 15.
3308 Leonard Darras, 151, Strand, London.—Improvements in and relating to portable engines.—February 15.

SPECIFICATIONS PUBLISHED.

6, Kenham, steam boilers, 1893; 6809, Mills, flanges and unions for steam pipes, &c., 1893; 8093, Bellamy, gas, &c., engines, 1893; 6453, Okes, internal combustion engines, 1893; 18,025, Jarram, vices and wrenches, 1893; 22,743, Broucek, miners, safety lamps, 1893; 24,681, Yarrow, multiple boilers, 1893.

The above specifications published may be had of Messrs. Rayner and Company, Chancery Lane, London, at 10d. each including postage.

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*** We shall be obliged by being promptly placed in possession of particulars regarding contracts open for competition, and of the results of successful tenders. In the latter case contract prices should be given.*

The date given is that by which tenders must be delivered, in nearly all cases further information can be obtained on application at the addresses given. In applying for such the name of "The Mining Journal" should be mentioned as the original source of the information, concerning which further particulars are required.

HOME CONTRACTS.

Reservoir, March 6 (*Hunslet, Leeds*).—For the construction of a covered service reservoir at Middleton, for the Hunslet Union Rural Sanitary Authority. Plans and specifications of Mr. J. H. Rhodes, 92, Albion Street, Leeds, on payment of £3 3s. afterwards to be returned.

Lamp Glasses, March 7 (*London, E.C.*).—For the supply and delivery of lamp glasses and fittings, plate and sheet glass, &c., for the East Indian Railway Company. Tenders to be sent to Mr. A. P. Dunstan, Nicholas Lane, London, E.C.

Coal, March 7 (*Birmingham*).—For the supply of gas coal to the workhouse for year ending June 24, 1895, for the guardians. Sealed tenders to be delivered at the Parish Offices, Edmund Street, not later than 1 p.m. March 7.

Girders, March 10 (*Macclesfield*).—For the supply and erection of the cast-iron girders required in the covering of the River Bollin at the gas works, for the Gas Committee. Drawings and specifications to be seen at the office of Mr. J. G. Newbiggin, engineer.

Engines and Tenders, March 14 (*London, E.C.*)—For the supply and delivery of four locomotive goods engines and tenders for the Mexican Railway Company (Limited). Specifications with conditions and forms of tender to be obtained at the company's offices, 45, New Broad Street, London, E.C.

Railway Stores, March 21 (*Dublin*).—For the supply of various railway stores for 18 months from April 1, for the Dublin, Wicklow, and Wexford Railway Company. Specifications with forms of tender of Mr. H. W. Mansell, secretary, Westland Row Terminus, Dublin.

Sinking Pits (*Aberbeeg, Mon*)—For the sinking of two pits near Aberbeeg, Monmouthshire, to the steam coal measures. For particulars apply to Messrs. John Lancaster and Co. (Limited), Blaina, Mon.

Sluice Valve, (*Manchester*).—For the supply of one 24-inch sluice valve for the Waterworks Committee. Plans and specifications on application to Mr. T. H. G. Berrey, Waterworks office, Town Hall, Manchester.

Excavation (*Neath*).—For excavation and concrete work. Apply, Eagle Tinplate Company (Limited), Neath.

Stores, (*Glasgow*).—For the supply of stores for one year from April 1, for the Pumpherston Oil Company (Limited), 24, St. Vincent Place, Glasgow. Specifications and forms of tender on application at the office.

Construction of Railway (*Madrid*).—The Secretary of State for Foreign Affairs has received from Her Majesty's Ambassador at Madrid, a copy of a royal decree, inviting tenders for the construction of a railway from Manila to Taal by Calamba and Batangas. The decree can be seen at the Foreign Office, S.W., on week-days between 11 and 6.

OUR INQUIRY COLUMN.

TO CORRESPONDENTS.

Correspondents will please take note that all communications will in future be answered in this column and not through the medium of the post. All questions and replies should be accompanied by the name and address of the writer.

REPLIES.

T. H.—Please send us a sample.

PROVIS.—We do not think the matter suitable for our columns.

WINDSOR.—We will endeavour to find space in our next issue.

ABELL.—All according to ability, from £70 per annum and upwards.

W. H. H.—To some extent your remarks are correct. There is always, however, a chance of something new appearing.

J. JONES.—Application must be made to the authorities.

J. MARRIOTT.—We should like to see a specimen.

A SUB. (Manchester).—We do not understand your query. Is not the waste got out by the piston?

A. D. (Perth).—Evidently you have not seen our reply. We will be glad to see your first chapter.

N. S. W.—Our own.

OWEN.—We do not see sufficient advantage in the scheme to advise its adoption.

KIPPAX.—Please describe the construction of the machine—there are many varieties.

J. G. D.—The subject will be treated upon in due course. We have already made the necessary arrangements with our special correspondent.

WOKING.—Write to Civil Service Commission, Cannon Row, Westminster, S.W., for particulars.

L. J. McC.—Kirkpatrick's Hydraulic Gold Miner's Manual, published by Messrs. E. and F. N. Spon, 125, Strand, W.

T. M.—It was an indiscreet investment. We should be disposed to get out of it as soon as possible.

L. S. D.—Hold on.

P. C.—1. Consols. 2. Yes.

A 1.—It is a good investment.

T. W.—Your inquiries are somewhat vague. Please state precisely what you desire information upon.

J. L.—The holder is liable to the extent of the shares he has taken. When they are fully paid up the liability ceases.

PENN.—(1.) The company appears to have a good prospect. It seems very likely that the shares will go up. (2.) As far as we can tell.

DEAFNESS AND NOISES IN THE HEAD cured at the patient's home. This Illustrated Edition also treats on the cure of Catarrh, Bronchitis, Asthma, Extreme Stoutness, Indigestion, Dyspepsia, Rheumatism, by Medico-Electricity.—4d. G. R. BRIGHT, Publisher, 8 Tavistock Place, London, W.C.—[ADVT.

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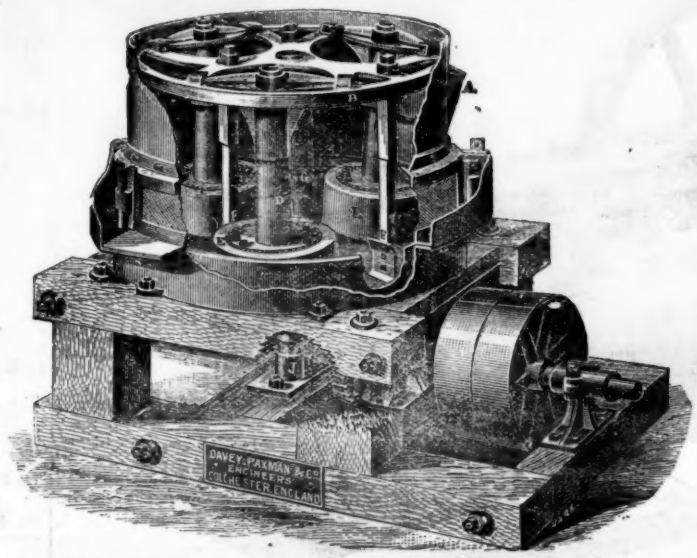
Telegraphic Address:

"PAXMAN, COLCHESTER."



Huntington's Patent Centrifugal Roller Quartz Mill for fine pulverizing in Concentration.

LONDON OFFICE
78 [late 139], QUEEN VICTORIA STREET.

D. P. & Co., after a great number of careful experiments have so improved and perfected the Huntington Mill that it must now be classed among the greatest inventions of the age. The excellence of its work is undoubted, and its superiority over Stamp Mills will soon cause a revolution in its favour for Quartz Crushing. Its first cost, and cost for freight and transit is much less than for stamps, it absorbs about half the power for the same output, and is continually crushing. It can be fixed and started in 12 hours, requiring for foundations only two pieces of timber 12 in. by 12 in. by 14 feet long, is more reliable than stamps, and has perfect delivery. It is used to its greatest advantage on gold quartz, for, because of its excellent amalgamating properties, it catches about 75 per cent. of the gold put into it.

Full Particulars on Application to

DAVEY, PAXMAN & Co.,
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MACHINERY, MINING and RAILWAY PLANT, &c.

Illustrated Descriptions of New and Standard Mechanical Appliances, Accessories and Processes, adapted to Mining, Metallurgical, Railway, Engineering and other Industrial Purposes.

A NEW SMALL PORTABLE DRILL.

ANOTHER mining appliance, whose claims to merit should at least command careful attention, has just been produced by the General Electric Company, of New York, in the shape of a small portable drill for both anthracite and bituminous mines, designed to supplant the laborious breast drill, and to be used in the slate or rock roof and floor. Two types of it are made, one for the heavier and one for the lighter work. The control of the motor is effected by a small plug switch. Feed screws of different pitch are furnished for varying the speed of boring, and a friction clutch protects the motor should any particularly hard obstacles be struck suddenly. The columns are made in different lengths, and each is adjustable for about 2 feet variation. The construction of the drill and its method of mounting enable the operator to drill close to the roof, floors, or walks, as well as in any direction, as above noted.

Several experiments, carried out to test the efficiency of the drill, are reported to have terminated most satisfactorily. One of the trials showed a rate of drilling of 6 feet in 48 seconds. The smaller drill weighs, complete with post, 160 lbs., and of this only 100 lbs. is due to the drill itself. "It will, therefore, be seen," say the manufacturers, "that these rotary drills meet the requirements of strength, lightness, capacity, ease of control, and adjustability, practicability, and economy."

A NEW SAFETY OIL LAMP.

The large number of deaths in terrible forms which occur annually from lamp accidents would fully justify, if any justification were needed, the many efforts directed within the last few years towards the production of a safety lamp worthy of the name. Mr. J. R. Howarth has submitted to a committee of experts an invention which seems to go very far towards solving, if it does not completely solve, the difficulty, and which has already met with favourable judgments at the hands of those competent to form them.

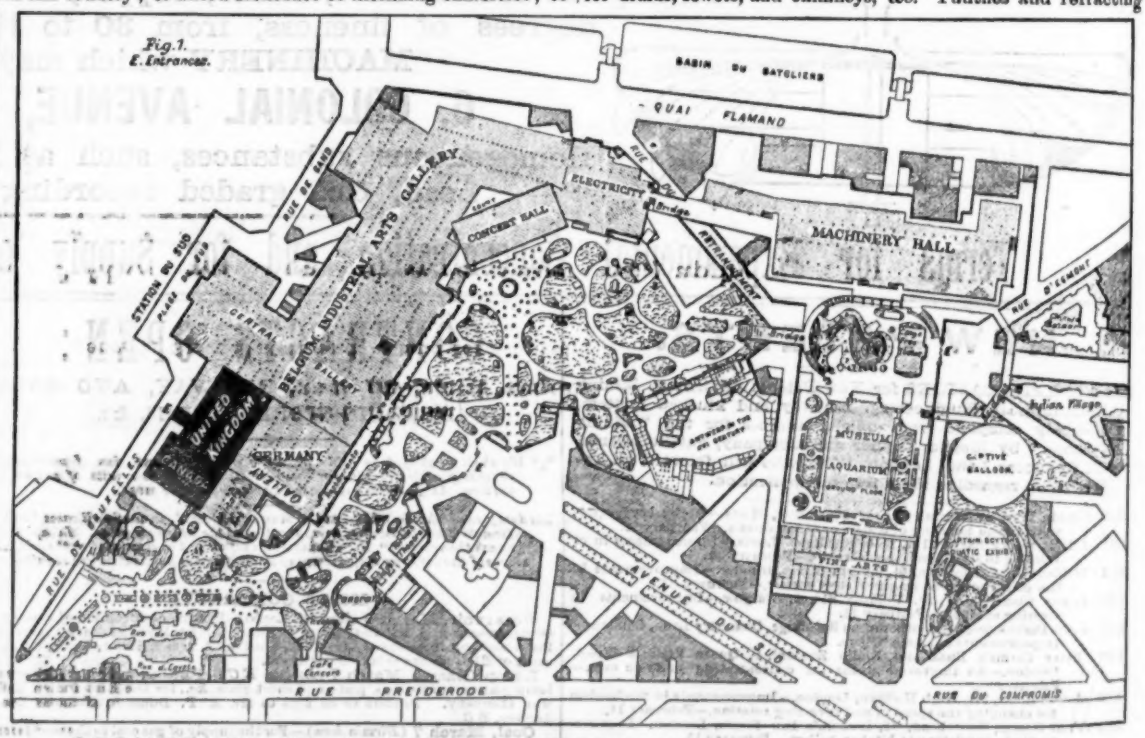
Briefly stated, the new proposal is to charge the reservoir with a peculiarly absorbent porous material, not unlike felt, afterwards saturated with oil. No space is thus left within the reservoir for the formation of any explosive mixture of oil-vapour and air. For charging the lamps a tube running from the pedestal upwards is used. The operation is very rapid, and, once charged, the absorbent substance is said to yield to the wick its last drop of oil. According to the claims prepared on behalf of the invention, the lamp, when lighted, may be knocked over and rolled on the ground without danger of explosion. Even if broken into pieces the oil does not explode, but burns slowly away in the detached pieces of composition, which is one of the most complete absorbents ever put upon the market. Were a light put against the substances, the oil could only burn slowly away.

As additional advantages connected with the invention, it may be mentioned that the price is one which renders it accessible to all, and that the absorbent, while seldom requiring renewal, acts as an effective purifier upon the oils passing through it. It is also applicable to all kinds of oils—even the most inflammable, such as benzoline.

Should Mr. Howarth's lamp bear the test of long practical use as well as it has borne that of initial experiment, it may not unreasonably be hoped that, if the public be induced to adopt it, the large mortality resulting from lamp explosions will be reduced to a minimum, and many who have hitherto abjured lamps for illuminating purposes on account of the dangers connected with them, will take them again into favour.

THE FORTHCOMING INTERNATIONAL EXHIBITION AT ANTWERP.

UPON the invitation of the executive of the Antwerp International Exhibition, which will be opened in May, the London Chamber of Commerce has appointed a large and representative consultative committee for the purpose of ensuring an adequate British representation at the Exhibition. The Lord Mayor has accepted the presidency of the committee, and the Chairman is to be Sir A. K. Rollit, M.P. A glance over the list suffices to show that there is no important branch of British industry that is without its representative there. The chief purpose of the committee is to give any advice which may be asked for by the British Commissioner-General of the Exhibition in Belgium or by the executive of the British Section of the Exhibition at Antwerp; to publish information about the Exhibition, so as to make its operations well known in London and in this country; to afford assistance to intending exhibitors; to do its best to induce representative British and Irish houses to exhibit, in the mutual business interest of both nations; and to secure as far as possible our own nation's cordial co-operation in the enterprise. The London Chamber of Commerce will furnish intending exhibitors with all the necessary information, and enquiries to that end should be sent to the secretary at Botolph House.



GROUND PLAN, ANTWERP INTERNATIONAL EXHIBITION 1894.

Mr. Gerald R. de Conroy-Perry, H.M. Consul-General at Antwerp, who is, with the approbation of the British Foreign Office, acting as British Commissioner-General of the Exhibition, has contracted with the Belgian executive for the entire space required for the British Section, and it is believed that all necessary steps have been taken by the Commissioner-General to ensure the proper interests of British exhibitors.

The Exhibition will include within its scope the whole range of human activity. Industrial, scientific, and artistic productions of all kinds, as well as every sort of commercial produce, will be covered. There will be Maritime, Colonial, and African sections, and an exhibition of Military Art. Contemporaneously with the International Exhibition, the Antwerp Royal Society of Fine Arts will hold a special exhibition of painting, sculpture, engraving, and architecture, towards which contributions are invited from artists of all nationalities. As showing the extent of the Exhibition it may be mentioned that the main buildings cover some 120,000 square yards of ground, and that the concert hall measures about 6000 square yards. The metals used in the construction of the halls are steel and iron, the roofs being of zinc.

The Fifth Section is devoted to mineralogy. The seven classes included in the section are worth setting out fully:—Class 15.—Mines: Collection and samples of rocks, minerals, and ores. Combustibles. Different kinds of coal. Mining, its various methods, modes of working, &c. Raw mineral oils.—Class 16.—Quarries and Cements: Collection and specimens of building stone; hewn stone; marble; slates; phosphates; clay, sand, &c. Natural cements; grind-stones and mill-stones. Sharpening and polishing stones. Plans and working models.—Class 17.—Ceramics: (*a.*) Ceramics; bricks, tile, stoneware. Hollow and polished bricks; hollow tiles for partition walls. Incrusted tiles for pavements. Stone-tiles and pipes for drains, sewers, and chimneys, &c. Pantiles and refracting objects. (*b.*) Artistic ceramics. Earthenware, hard and soft china-ware. Biscuit china. Decoration and painted earthenware and china. Washed enamels. Earthenware in colours, &c. Class 18.—Glass and Crystal: Glass manufactures; glass for household use and fancy purposes; imitation gems; gems and pearls. Processes and manufactures used in the production of the above articles. Class 19.—Metals; Iron and Steel: Raw metals; pig-iron, steel, metallic alloys; cast-iron, iron of commerce; special sorts; rails, plates, beams and girders, wire, ingots; steel and iron blooms. Productions of the wire-drawing industry. Ironmongery; metallic tissues; needles and pins. Class 20.—Zinc: Zinc ore in all its different forms. Class 21.—Other Metals Such as Brass, Lead, Nickel, &c.: Copper, lead, nickel, silver ores; products resulting from the treatment of these ores.

It will be seen from this that the Mining Section of the Exhibition, if it meet with the support which may justly be anticipated, will be worth the careful inspection of mining men. It remains, therefore, only to hope that the achievements will be what the opportunities allow and the occasion demands

WILGENA GOLD FIELDS.

REPORT BY THE GOVERNMENT GEOLOGIST.

(FROM THE "ADELAIDE OBSERVER.")

THE Government Geologist (Mr. H. Y. L. Brown) has forwarded to the Commissioner of Crown Lands a report on the geology of the country along the route from Strangways Springs to Wilgena, and on the gold discovery near the latter place. During Mr. Brown's recent two month's tour in the North, in addition to the country reported on, the Margaret and Peake Ranges were prospected for gold, with the result that a gold field will probably be established at Mount Kingston. A report and map of this country will be prepared by the Government Geologist when he has completed his examination of it. for which purpose he proceeded to the locality on Monday. The report is as follows:—

Strangways Springs.

These are an extensive series of mound springs belonging to the cretaceous formation, lying some 30 miles south south-west of the south-west portion of Lake Eyre. These springs occupy an area three-quarters of a mile by half a mile, elevated from 50 to 100 feet above the surrounding country, composed chiefly of a dense travertine limestone, an ancient spring deposit which has been built up by the overflow of the water from numerous springs, centres forming a series of mounds, some of which are extinct springs, while others are flowing from cups or basins of rock formed by the gradual upheaval of the water. This spring limestone in many places is discoloured by and incorporated with oxide of iron, manganese, and silicia, also deposited from the water, and the soft mud about the springs often contains sulphate of iron and alum, arising doubtless from the decomposition of iron pyrites in the clay and underlying shale. Wood, coal, or lignite occurs in one place. The bore sunk by the Government on the railway line, about two miles from the springs, is still flowing, and the water has created a swamp covered with a thick growth of reeds in the neighbourhood. Small fish, shrimps, &c., exist in the water. The former are believed by many to have a subterranean origin, and to have come up from the bore. There is no reason, in my opinion, for this belief, as it is impossible that fish could live in the sand and gravel drifts from which the water flows. That their presence is due to the ova having been brought from other localities by ducks or other birds in a similar manner to that in which the seeds of the aquatic plants now flourishing at the same place have been brought seems to me a more reasonable theory.

Beresford Hill and Spings are ten miles south-east of Strangways. The hill, which rises to the height of 170 to 200 feet above the plain, is composed of a mass of similar travertine limestone, but very ferruginous in places, and marked by what appears to have been reeds or coarse grass. It is without doubt an extinct spring, the outline of the crater-like depression on the top, from which the water flowed, being distinctly marked. A short distance to the south-east there is a second flat-top hill of the same limestone rock. The existing springs lie on the adjacent plain at a low level, and have deposited but a comparatively thin bed of limestone. The underlying cretaceous clays outcrop at the base of the hill, and have the usual dome-shaped masses of limestone containing fossils of cretaceous age. From Strangways to Miller's Creek, and thence to Mount Eba Station, the country has the usual surface configuration peculiar to the stony downs and tablehill country of the cretaceous formation. Billa Kalina is a group of three or four mound springs, some of which are extinct through the travertine limestone having closed their outlets. There is a good supply of water here. For seven or eight miles south-westward outlying springs are occasionally passed. Near North Creek there is a deposit of boulder and gravel drift, chiefly quartz, similar to that found elsewhere in the neighbourhood of the primary rocks, which latter may, therefore, be expected to outcrop somewhere in the neighbourhood. Between Crown Well and Miller's Creek there is an almost level tableland, the only rock showing being a dense magnesian limestone resembling lithographic stone.

After leaving Miller's Creek ferruginous sandstone, grit, quartz, conglomerate, and brown iron ore are associated with the jasper rock, quartzite, and flint of the stony downs. Mount Paisley is a flat top hill of jasper quartzite on white and yellow claystone; it rises some 350 feet above the surrounding plains. Mount Deputy and other neighbouring hills are of similar formation. From Strangways to Mount Paisley the country is almost treeless, except for a few gums in the creeks, but westward when the red loam and sand begin to form the surface and replace the stony downs the country is thickly covered with mulga, myall, and other trees and shrubs. The main area of mesozoic (cretaceous) country seems to have its western boundary here, although there may be outlying patches of considerable extent still further west. Over all these stony downs and plains at intervals waterworn boulders, attaining often a considerable size, are thinly scattered on the surface. These are composed of quartzite, sandstone, quartz, felspar, porphyry, &c., all fragments of primary rocks which do not now come to the surface anywhere in the neighbourhood. The question arises—How were these boulders deposited in their present position on the surface of the secondary rocks, and at such long distances from any known outcrop of primary rock? The only theory which will account for their presence here, as well as at numerous other places where I have previously observed them, is that of their having been transported by drift ice at the time when this central portion of South Australia was under water.

The boulders of felspar porphyry are very common, the nearest outcrop of the rock *in situ* being in the Gawler Ranges. This theory of ice action in tertiary times would account for the beds of gravel which also occur on the surface of these inland plains, and for the levelling and apparent planing down of the primary rocks bordering them. Southward of Mount Eba Head Station the primary rocks begin to show themselves a'ong the surface in small outlying island-like outcrops through a sea of red sand and loam. The route taken was round the eastern end of Lake Labyrinth. Gosse's Range, Rocky Hill, Wallabyng Range, and Mount Eba are some of the principal outcrops of primary rock. Rocky Hill is composed of quartzite and flint conglomerate; Wallabyng of white quartz rock, quartz, and quartz conglomerate, apparently in horizontal beds, which may, however, be the axis of an anticlinal. The elevation is about 200 feet. Copper stains are visible in one place here. Mount Eba, which has an elevation of 425 feet, is composed of a ridge of white quartz rock, striking north-east and dipping south-east, on which rest beds of clay, slates and sandstone with silicious ferruginous veins and reefs; it is a likely place for gold, but the area to try is very limited. Along the south side of Lake Labyrinth, whatever the bedrock outcrops, it consists of granitic rock, eruptive and metamorphic of various kinds, quartz rock, quartzite, and slate. Exposures are, however, few and far between, as the red sand, loam, and clay cover over nearly the whole of the country.

The Wilgena country may be considered a vast plain with salt lakes and claypans, and occasional outcrops of igneous and metamorphic rocks in isolated patches, of which the Warburton Ranges are the most extensive. These ranges are some 300 or 400 feet above the general elevation. With the exception of these isolated outcrops and occasional flat-top hills of jasper rock, sandstone, grit, clay, and gravel of tertiary age, which cap them in places, the country is occupied by red sand, loam, and clay, which effectually covers the underlying rock formations of every age.

The Gold Localities.

Gold has been found at two places on the Wilgena Run. No. 1 locality is in the vicinity of Lake Harris, 36 miles in a south-easterly direction from Wilgena Head station, and eight miles north-east of Arcoodaby, an outstation of Wilgena. The gold occurs in surfacing and the alluvium of a gully, near where it is crossed by a quartz, quartzite, and granite reef running north and south. From this place it has been traced down the gully for 100 yards or more, but as the gully widens out considerably the run of gold has not been traced further. The gold, which is not waterworn, is flaky and filamentous in character, and has apparently been derived from a vein or veins in the immediate neighbourhood, which veins were probably small, and consisted of gossan or soft flookan. The bedrock consists of soft kaolinised granite, with quartzite and hard granite, and contains quartz reefs; overlying these there are cappings of jasper, quartzite, grit, sandstone, and quartz conglomerate of probably tertiary age; these form low tablelands with escarpments, and the conglomerate is likely to contain gold. The country is comparatively flat and the hills of small elevation. The gullies are flat and ill-defined a short distance after they leave the low ranges, and there is a general absence of alluvial deposits and watercourses, which tends to make prospecting more laborious and uncertain than is usual. There are a good number of large quartz reefs in the neighbourhood traversing the kaolinised granite, and striking in a north, north-east, and north-westerly direction. The quartz is white and glassy in character, and there is an absence of gossan, although it is possible that veins of this and pyrites exist alongside in connection with them, which do not show on the surface.

About one and a half miles eastward of Keynella Well, there is a hill from 150 feet to 200 feet in elevation, chiefly composed of brown iron ore, hematite, jaspery iron ore, with flint and quartz veins, traversing kaolinised granite, indurated felstone, syenite, and other granitic rocks. The great drawback to prospecting is the red loam and sand covering I have so often alluded to, the absence of well-defined gullies and watercourses, and the limited extent of the isolated patches of bedrock, from veins in which the gold is derived. There is no doubt, however, that the gold found is sufficient to show the probability of payable patches existing in the neighbourhood, and between this place and Lake Harris, but it is only by a large expenditure of time and labour in prospecting that such are likely to be found. The nearest wells are Glenloth, one and a half miles west; Arcoodaby, eight miles south-west; and Yerda, seven miles west. I understand that the depth of sinking does not exceed 100 feet. The water is obtained from the granitic rock, which in all cases is kaolinised to a considerable depth below the surface.

Gold Locality No. 2.

This is situated about 15 miles in a north-westerly direction from Wilgena Head Station. Here a few colours of gold had been found on the bank of a well-defined gully running southwards. I had this gully tried in several places, and obtained fine colours of gold in wash resting on a decomposed granite bottom. The wash is partly cemented, and sinking is difficult on that account. The prevailing rocks are quartz rock and quartzite, with brown iron ore, hematite, and jaspery iron ore veins and granite. In this case, also, the expenditure of much time and labour is required to prove whether gold exists in payable quantity, as the gully requires trenching across and testing in several places, which, owing to the hardness of the ground, is a difficult undertaking. Here, as elsewhere, the prevailing covering of red loam and sand is also a drawback to prospecting operations. With reference to the geology of the district generally, the following relates to some of the principal points of interest observed in passing over the country. Gibraltar Well is sunk in granite detritus, sandstone, grit, and pebble conglomerate of tertiary age. There appears to be a considerable area occupied by this formation in the same neighbourhood. It is advisable to try this gravel for gold.

Rounsevell's Hill is a small peak of syenite. Gibraltar is a long outcrop, extending in a meridional direction of hard hornblendic granite and syenite. Pompeter—Coarse porphyritic granite. Pompeter Well—Felspar porphyry, a dark doleritic rock and felstone. Felspar porphyry is common in the neighbourhood. Ealbra Well—Felstone felspar porphyry, and a dark doleritic rock. Jasper quartzite, grit, sandstone, and kaolin beds overlie these rocks over considerable areas. Ti-tree Well is sunk in rocks of this description, the water being obtained in drift sand. Mentor Well—Jasper quartzite, kaolin, &c. Partri ge Range—Felstone, trachyte, granite, syenite. Wilgena Trig.—Here beds of brown iron ore, red and yellow jasper rock, claystone, sandstone, &c., are interstratified. They strike north-westerly and dip north-easterly at high angles. Beds of quartzite and ironstone of the same kind compose the adjoining hills. Southwards towards Wilgena Head Station these rocks are overlaid by a tablehill formation of jasper quartzite, grit, and sandstone on kaolin, and sandstone containing boulders and pebbles of quartz and other rocks. This formation is apparently of tertiary age, and may be reasonably expected to contain gold where it junctions with the bedrock. The prevailing rock in which the numerous rock waterholes are situated is a coarse granite often having a porphyritic structure. The rockholes occupy places where the granite has been removed through decomposition of the granite itself, or a dyke of softer rock penetrating it, aided, perhaps, in some cases by the erosion of water. Travertine limestone is often present, forming a crust and in nodular forms on the surface of the primary rocks. The felstone and felspar porphyry found here resemble greatly the rock forming the Gawler Ranges, and are doubtless a continuation of the same group of rocks. With regard to the probabilities of a payable gold field being found in this region, I believe that in a country occupied as this is by so many varieties of eruptive and metamorphic rocks deposits of gold must exist, but through the low general level of the surface and the prevailing covering of loam, sand, &c., they will be difficult to find. The places where gold should be searched for are not only in the alluvial gullies and surfacing, but along the edge of the low flat-topped jasper quartzite hills, where the gravel and conglomerate rest on the bedrock, and also in places where the same gravel and conglomerate occupy basins or valleys as at Gibraltar Well. Some of the large outcrops of iron ore and quartz rock, although they resemble lode formations, appear to be portions of the bedrock as at Mount Eba trig, where the quartz rock is a metamorphosed sandstone, and Wilgena trig, where the iron ore and ferruginous jaspery rock are seen to be altered bedrocks of claystone, sandstone, &c.

Messrs. R. Hornsby and Sons (Limited), of Spittlegate Iron Works, Grantham, are manufacturing a large double furnace water tube boiler for the Whitehead Torpedo Company, at Weymouth, being the third order given by them for this type of boiler. We understand from the purchasers that the economy of fuel in the working of these boilers is quite beyond their expectations.

MINING IN SCOTLAND IN EARLY TIMES.

LECTURE BY MR. COCHRAN PATRICK.

ON Monday night, under the auspices of the local Literary Association, Mr. R W. COCHRAN PATRICK, of Beith, lectured on the subject of mining in Scotland in early times. The chair was occupied by Mr. ALEXANDER DONALD.

The LECTURER stated that Scotland possessed a unique history in reference to mines and metals, because every mineral that was known was recorded in Scotland. He had not, however, yet found satisfactory evidence that tin was ever worked, though it was quite certain that tin was mentioned in several early Acts of the Scots' Parliament. He proposed to give a brief account of early mining in Scotland in connection with gold and silver and coal. He did not intend to deal with iron or lead or copper. Though iron was mentioned in the twelfth century, he was not satisfied that it was at that early period worked in Scotland. It was certainly worked in the beginning of the seventeenth century, but the interest in it was exceedingly technical. He did not propose to say anything about copper mines for the same reason. It was curious that the earliest attempts at mining in Scotland were confined to precious metals. As early as 1153 David I., King of the Scots, made a grant to the monks of Dunfermline of the tenth part of all the gold coming to him from Fife and beyond the Forth. In recent times there was a rediscovery of gold in the county of Sutherland; but Sir Robert Gordon, in his history of that earldom, notes that very nearly 650 years ago gold was worked there by Gilbert of Moray. In 1424 the Parliament of Scotland granted all the gold mines in the country to the Crown, and also all the silver mines in which three halfpennies of silver could be fined out of the pound Scots of lead; but the Crown frequently granted this right to private individuals. The principal place where gold was found in Scotland in early times was in the shire of Lanark, on Crawford Moor, and the amount of that precious metal derived from that source was very surprising. It first occurred in this connection during the reign of James the Fourth, King of Scots. Many of the miners were foreigners, probably from the Low Countries. The battle of Flodden put a stop to all commercial enterprise for a time, but in 1515 the Queen Regent directed that the mining on Crawford Moor should be recommenced. Very little was done in gold mining during the minority of Mary and the regency of the Earl of Arran, but when the Queen Dowager came into power operations were resumed. During the minority of James VI. a licence was given to a Dutchman by the Regent Moray to work gold and silver mines in Scotland for 19 years. The gold found was principally in glens, and six score of workmen were employed during summer in searching. The gold was taken to the Mint in Edinburgh, and was coined into the famous £20 Scots pieces of James VI. The miners were paid 4d. a day Scots, or at the rate of 13s. 4d. to 20s. per ounce, if not hired by the day. In subsequent years other licences were granted, but from 1616 to the present no considerable amount of gold had been found in Scotland.

The fact that the precious metals were found in Scotland naturally attracted a good deal of attention. In particular, England was interested in the matter, and the reports of several spies who were sent to look at the country were still preserved in the State Paper Office in London. A certain Robert Seton, who was designed of Mexico, and probably was trained there, reported on the mines in Scotland in the reign of James V. He found gold in Dinley Hill, in Carrick, not far from Maybole; and in Caylies Moor, within the burn betwixt Sorn and Mauchline Place; and in Glenapp, betwixt Carrick and Galloway. A Colonel Borthwick reported a little later that there was silver to be found in Sorn. Silver had been found in large quantities in Scotland, but from the fact that it was generally mixed with lead it was not recorded at as early a date as gold. Maclain, of Lochbuy, in Mull, had a silver brooch which tradition affirmed to have been made out of silver found on his property about 1500. He thought we could claim that Scotland was the first country in Europe, and probably in the world, which recognised the advantages of coal, and such a high authority as Professor Innes believed that the charter by which, in 1219, Sayer de Quinci granted 675 years ago to the monks of the Abbey of Newbattle the coal heugh, between the burn of Whytrig and the lands of Pinkie, is the earliest notice of coal mining extant. But coal must have been in common use before the date of this charter, as there was nothing in the wording to show that it was an unusual or new thing. In 1294 he went on to say, James, the High Steward of Scotland, gave to the Abbey of Paisley, the right to search for and win coal in the lands belonging to that foundation. Coal was an article in common use in 1425, when an Act of the Scots Parliament required all burghs to appoint a "Lele" man to weigh and measure, as well coals as other goods. Early in the reign of James II., or, according to other authorities, James I., Pope Pius II. visited Scotland, and he narrated that the poor, who begged at the door of the monasteries, went away with joy in their faces on receiving what appeared to him as black stone, which, there was no doubt, was coal. It was recorded that coal had been worked in Ayrshire at Prestwick, in 1489, and near Tarbolton in 1497. So long ago as 1563 a scare occurred, which periodically still was not unknown. In that year an Act was passed by the Scots Parliament, prohibiting the export of coal on the ground that the stock would soon run short. In 1572 coal was worked at Culross, and in 1584 mention was made of a coal pit at Dysart belonging to Lord Sinclair. In 1621 the Privy Council fixed the price of coal at 7s. Scots the load, but proprietors objected, and set forth their reasons in a petition. In conclusion, the lecturer alluded to the position of the workers in mines under the old law of Scotland. An Act of the Scotch Parliament, in 1606, provided that no one could engage coal workers, carriers, or salters without a testimonial showing reasonable cause for leaving the service of their late master. If any did so, the master from whom they deserted could claim them within a year and a day, and they had to be given back within 24 hours under the penalty of £100 damages, the individuals who had deserted being punished as thieves. Another Act of Parliament in 1641, extented these provisions to all employed about mines, and enacted that not one was to receive a higher fee than 20 merks. "Idle days" were severely punished. The same Act provided that, whereas in times gone by coal hewers were in the habit of lying idle, they should in future work six days in every week, under the penalty that for each day he was off work he should pay 20s. as a fine, besides suffering other punishment in his body. This intolerable state of matters lasted down to a comparatively recent period. The unhappy miners were specially exempted from the benefits conferred on the Scottish people by the *Habeas Corpus Act* of 1701, and lasted down to 1775, when an Act of the united Parliaments was passed to relieve colliers and salters from what was really a state of slavery. But their full emancipation did not take place till the year 1799.

On the motion of the Rev. Mr. MONTGOMERY, a vote of thanks was passed to Mr. Cochran Patrick for his interesting and instructive address. A similar compliment having been paid to the Chairman, the meeting terminated.

VENDORS.

By E. HENRY DAVIES, M.E., F.G.S.,
Author of "Machinery for Metalliferous Mines," &c.

MOST men interested in mining matters have, at one time or another, figured in the capacity of either vendor, valuer, promoter, or purchaser. The latter form the largest class, as every mining shareholder comes practically under this head. It is he who has to pay the piper, and it is for him to see that the price he is paying is a fair and honest one, and not, as is far too often the case, a sum fixed, more or less, at random by the vendor; increased to cover the ideas which the inevitable middleman may have of his services; increased again by the promoters to cover their risks in providing the capital, until, at last, when it is laid before the public, it has swollen to a sum which only a mine of record-breaking productiveness can ever hope to repay and live.

Over and over again have the public been drawn into such transactions, misled to some extent by a well worded prospectus, though, perhaps, to a greater extent by the brilliant halo of possible success, which seems to surround all mining ventures, dazzling the eyes of the uninitiated by the records of a few millionaire mines, and blinding them to the gaunt and bare wrecks with which the pages of the past are liberally bestrewn. Each one believes not in the absolute intrinsic merits of the undertaking, but in some working of fate or destiny which will so influence the market as to enable the particular individual to get rid of his or her shares at a profit. In short, a mining venture is far too often looked upon as a gambling speculation, which may or may not turn up trumps.

This is the spirit in which money is invested, and if the business turns out a success, all well and good, but if otherwise, then the wrathful shareholder is apt to turn round on the board and make matters lively for its members.

In our former articles in these columns on the Management of Mines, December 2, 1893, and The Choice of Concentration Machinery, February 3, 1894, we have pointed out some of the causes of want of success in mining undertakings after work has been fairly started on the mine. From a chronological point of view we ought possibly to have turned our attention first of all to the subject of vendors, for upon their shoulders also must a portion of the blame of failure rest, while a mistake made in the purchase of a mine can rarely be remedied afterwards, but must continue to act prejudicially to the interests of the shareholders throughout its whole history.

The mines which are offered for sale may be roughly divided into two classes. Firstly, those upon which some money has been spent in prospecting and development; and, secondly, those which are fully equipped and earning an income for themselves. We are well aware that there are many intermediate classes and an endless number of modifications, but we believe that our readers will be able to apply our observations to meet their own particular cases and needs.

The first mentioned class are the most difficult to deal with, and are also the most frequently met with. Difficult because they offer nothing tangible upon which to base a valuation, and numerous because the large army of prospectors scattered all over the world supply the market with an unbroken continuity of proposals modestly calculated to make their own fortunes, if not those of the investing public.

Now, these propositions, in a large number of cases, consist, when reduced to their simplest expression, of a few holes dug upon the line of the outcrop of a lode on a mountain side or of a few primitive excavations made into an alluvial deposit; and these with the stuff got out of them form the only visible basis upon which the value of the property can be based. Perhaps, as an additional feature, the chimneys of a successful mine can be seen in the far distance, and, possibly, the lodes from that mine can be traced into the property under examination. The samples obtained from the trial pits may be excellent, but samples are proverbially untrustworthy, and, even if taken with honest intentions, form a most unreliable guide.

Now, the intending purchaser will naturally take into his consideration the position of the property, as regards other and similar ones, but the mere fact of its lying to the north or south of the great Wheal Doem, is no substantial reason for the vendor to add on a few thousands in cash to the price he asks.

Usually, the original vendors are a group of miners who have spent a certain sum, in labour and cash, in securing the property or concession, and in prospecting its lodes. Now this sum can readily be got at, and if we add to it a certain amount for interest during the time it has been used, we arrive at the absolute bed-rock cash value of the property, and, starting from this, we can be guided by two excellent rules which summarise the position, first, that they who take the risks are entitled to the profits of success; and, secondly, that where nothing has been discovered which can be profitably worked there is nothing to pay for. This practically means that the vendors of such an undeveloped property as we are now considering must, after their past outlay has been refunded with moderate interest, stand in with those who find the working capital and share the risks with them.

On no other basis but this can business be done. If times are brisk a liberal view will probably be taken of the actual amount spent in the past, and slightly better terms may be obtained as to the proportion of fully-paid shares to be allotted for the remainder of the purchase price. At the present moment, when the market is as bad as ever it can be, only the most moderate demands would be entertained, and vendors would do well in their own interests to take to heart the old saying that "half a loaf is better than no bread." We venture, indeed, to state for their guidance that it is absolutely useless for them to ask, either now or in the future, fabulous cash sums for concessions which at the most have cost them but a few hundreds, and whose success when developed is, to put it mildly, problematical.

Only a few days ago we heard of a property which would have been taken up on such terms as we have outlined; the business, however, fell through solely because of the exaggerated price asked by the vendors, half of which, and it was a large sum was demanded, in cash and half in shares, the capital to be limited to a sum of double the purchase price.

Naturally enough, business on such lines was promptly declined with thanks, and out of idle curiosity we asked the vendors what they wanted with such a large sum in money, seeing that if their own reports were only half realised, they would, from their shares alone, be in receipt of a colossal income.

Their somewhat naive reply was that they desired this cash in order to develop other properties. It was evident, therefore, that notwithstanding the beautiful colouring of the reports submitted, they were not willing to take their fair share of the risks involved, but desired to throw all the onus upon the purchasers, and stake their own money upon what they clearly considered to be a better venture.

The education of the public in mining matters advances but slowly, but it has so far advanced that not only do they refuse to listen to such propositions as the above, but will, even when the bulk of the purchase price is in shares, insist that those shares shall not be disposed of for a given period. This seems to us to be a wise and just restriction, and is certainly an additional guarantee that the vendor believes in the value of the property which he has sold, and, indeed, we believe that recent legislation in France insists that the vendors' shares should be locked up for a period of three years. The same principle could readily be carried into effect here by arrangement between the purchasers and the vendors, and then if ever trouble arose, the original holders of vendors' shares would no longer be conspicuous by their absence from the company's meetings, but would doubtless be able and willing to offer their valuable assistance.

The proportion of the total share capital to be paid to the vendors cannot be determined by a hard-and-fast rule, but must largely depend upon the circumstances of each bargain, and the state of the development of the mine, the amount of cash already spent, and the results obtained.

Generally speaking, the bulk of all recent transactions have been upon a one-third basis, that is, the vendor has not received in cash and shares together a sum not greater than one-third of the capital of the company, the amount of cash being, as we have already intimated, practically only the reimbursement of the costs already incurred, so that the vendors accepted, as was but right, the same risk of success or failure as did the public.

We now come to the consideration of the second class of mining property, comprising the sale of those mines where the works have been in operation for some considerable time, have produced certain results, and realised profits.

Here there is some solid basis to go upon, especially if the management has been good, and the accounts truthfully and accurately kept. The valuation would be put into the hands of a skilled mining engineer, acting on behalf of the purchaser, and it will be for him to decide upon the value of the work done, that of the existing machinery, and the number of years purchase to be paid for the income derivable from the mine. As to this latter point, the average seems to be between seven and ten years, and a rough and ready estimate of the value would be to multiply the average yearly dividend by seven. If no income has been earned, then some good reason must be proved to account for the failure, or, otherwise, the value will not much exceed that of the break up value of the plant.

The engineer entrusted with the valuation will have need for all his skill and watchfulness. Vendors are not, as a rule, bashful men, and the price they ask will not be much of a guide to the real value. They can be fairly well trusted to make the best of their own case, and while giving every consideration to their statements, the engineer must beware of ways that are childlike and bland, or otherwise his clients may afterwards have cause to repent of their bargain.

We do not propose to enlarge at present on the pitfalls into which the unwary purchaser may stumble; the description of them would fill volumes. We will simply point out that the purchase of a mine is a serious business matter, not lightly to be undertaken, and certainly not without skilled advice. We are aware that this cannot be obtained without payment; but the money thus spent will either prevent disaster or secure success. No one, in fact, is better able and qualified to ascertain the attendant risks, and arrive at a just appreciation of the value of a mining property than an experienced engineer who has devoted his life to the subject.

MINING IN CORNWALL AND DEVON:

NOTES ON WESTERN MINING, EDITORIAL AND OTHERWISE.

IT may fairly be said that all matters of mining interest are absorbed just now in the one question of the price of tin, to the drop in which, so far, it may be asserted, without fear of contradiction, there seems no end, as the last Tuesday's ticketing will prove. Many a long year has elapsed since the metal was down to its present low figure, and, we are bound to say, we see no reason whatever why the downward process, now it has gone so far, should stay where it is. Not, indeed, that it would be possible to go very much lower, for any length of time, without most serious consequences.

AND yet it cannot be held that the public mind in mining circles is otherwise than hopeful. In fact, more or less, it is always hopeful. There cannot, indeed, be fairly said to be any zero on the mining barometer. Some gleams of hope are always evident when it is at its lowest, and the upward passage to the sanguine and excited phases is often very rapid, though it must be confessed it is a long time now since we had any experience of either of these stages. The practical way in which this feeling of hope is manifesting itself now is in keeping mining stock off the market, and, for the present, it may be certainly said that no better service can be done. Nevertheless, there is a general fall in the value of shares, which will probably continue, though the actual turnover is small, and can hardly, therefore, be treated as affording an adequate basis for more than individual deductions.

ONE of the most serious results of the low price of tin—the set-off on the other side to the increase of calls and the decrease of dividends is to be found in the reduction of hands at several of the mines. Naturally there is every desire to reduce the amount of immediately unremunerative expenditure to a minimum; and not only a desire but in many cases an absolute necessity; while other mines are likely to adopt the very wise resolution entered into at West Kitty, and limit the output of tin as nearly as possible to the quantity required to meet cost, which is, of course, practically equivalent to "stocking" tin in bulk underground. The policy of "stocking" tin once raised and ready for market is a question on which there may well be two opinions; but the policy of simply holding it in reserve in the lode is quite another matter.

ELECTRICITY IN MONTANA COPPER MINES.—It is announced in Butte that electricity is to be used extensively in connection with the development of the copper properties owned by W. A. Clark. The Rothschild brothers are said to have become interested with Mr. Clark, and to have dispatched to the ground a representative of a large English manufactory of electrical machinery. It is said that the plans contemplate the purchase of five electric hoists, nine electric pumps, both for station and sinking purposes, and electric drills. In fact, steam power will not be used around the mines for any purpose. A mammoth smelter will be erected near the site of the Butte Reduction Works, and this will also be operated by electric motors, and the electrolytic process of treating the ore will be adopted. To furnish the current for the mines and smelter the company will instal its own dynamos to furnish the motive power. Electric cars will convey the ore from the mines to the smelters, and the handling of the ores by elevators will also be accomplished by the use of electricity. It is understood that another proposition was discussed by the company—viz., the erection of the smelter at the Big Hole river, but this scheme was abandoned in the belief that better results could be obtained from the use of the electric fluid.—*Mining and Scientific Press*.

SPECIAL CORRESPONDENCE: COLONIAL AND FOREIGN.

OUR WEST AUSTRALIAN LETTER.

Warden's Report from Pilbarra.—The Murchison, Yilgarn, and Dundas Fields.—General outlook.

(FROM OUR OWN CORRESPONDENT.)

PERTH, JANUARY 19.

MARKING time is still the order of the day here. Until towards the end of next month, when the advanced guard of the army of gold-seekers and their camp followers are expected to arrive, I believe there will be very little to chronicle. We are busy in a half-hearted sort of way over the coming General Election; but even the great question of who is to rule over us for the next three years or so somehow fails to interest us greatly. Business continues to be very bad, in spite of our very "great expectations," and everybody will be glad when this beautiful "eternal summer" leaves us, and the autumnal rains, which will lure the diggers into the fields again, set in in right good earnest.

As if to fall in with the general feeling of depression, the Warden of Pilbarra has just submitted an anything but roseate report to the Government. His field has "not progressed very satisfactorily" during the last six months. He names two or three promising mines, speaks depreciatingly of two or three rushes which were only attended by evanescent successes, and winds up by hoping, as we all do, for the best in the near future, when work will be once more generally resumed. At Mallina, where there are two mines, we have all been led into auguring great things, for it appears temporarily paralised from the old cause-squabbles, divided councils, or something or other on the board of directors which sits at Glasgow. The Warden seems to think well of the pits owned by this Scotch company, and evidently wishes they would sink their differences, and proceed away at the quartz instead of each other.

From the Murchison and neighbourhood the reports are good as far as they go, but waiting for water is still the cry.

The Emerald, at Yalgoo, the last crushing at which gave the extremely satisfactory result of 150 ounces to the parcel of 14 tons, has changed hands, as after such good behaviour it was bound to do. Gibbs, Bright, and Co., of Melbourne, are the lucky purchasers, and the price was 7000 sovereigns for all but a 16th of the future proceeds, a share the late owners modestly insisted on retaining.

From the New Chum, at Mount Magnet, Mr. Dickenson has brought in a compact little cake of fine gold, which weighs 816 ounces. It is the result of treating 284 tons of stone. At the Hannan lease they are down 50 feet, and gold continues to show freely, but the reef decidedly narrows the deeper they go.

The Little Mystery looks very promising. The Sluicing Claim, in the same neighbourhood, lately thought very well of, has not come up to expectation. At the Empress Eugene, where so much alluvial gold was obtained by dry blowing, they have not yet succeeded in striking the paying reef. Several leaders have been traversed, but nothing solid has been found in spite of much cross cutting.

Messrs. Ford have had another stroke of luck at the Four Mile, where, by all accounts, although the owners are keeping their own council, they have struck something which even eclipses their former finds in their rich mullocky leader.

Coolgardie is almost deserted for the White Feather, Ninety Mile, and Siberia, from which happy hunting grounds the most exciting stories are received. A claim called the I O U, some dozen miles from the White Feather, has had dollied out from it over a thousand ounces during the last month. The Dundas field has been much talked of during the last few days on account of a report on it from the Government geologist. This account is, on the whole, reassuring about this almost deserted ground, but, so far as I can make out, only one lease—that of Messrs. Mawson and Kirkpatrick—is showing great results. Returning to Coolgardie, one may say that Bayley's is improving as it goes deeper. Of Bayley's No. 1 south the same may be said, and the Premier is turning out some exceedingly rich stone. Of a property next to the Premier, recently acquired by Lord Percy Douglas, good things are also prophesied, but the mine has not yet been sufficiently prospected to render the desirable consummation quite a certainty.

OUR BOOK CASE.

MINE SURVEYING.

"A Treatise on Mine Surveying." By Bennett H. Brough, A.R.S.M., F.G.S., F.I.C. (London: Charles Griffin and Co., Limited.)

Mr. Bennett Brough has been induced to write this book by the knowledge of a deficiency which it is difficult to believe should have existed so late in the 19th century. Both teachers and students have long been suffering the inconvenience of having to do without a general and complete work on Mine Surveying, and Mr. Brough has come thus efficiently to their aid. From the book, which is now before us, it would seem that those for whose especial benefit it has been written will pass immediately out of a dearth into plenty. The treatise will supply admirably enough the wants of the student "sweating" for the regular examinations; while the teacher, both in class-direction and in setting the test papers, will have his labours lightened to no inconsiderable degree by this elaborate and connected treatment of the subject. At the same time that the work thus admirably fills the blank remarked upon in the preface, the author somewhat superfluously cautions the student against supposing that it can ever be anything of a substitute for practical experience. It is the theory of the art alone he seeks to convey, or almost so. Nor does he confine himself entirely to British practice, which, according to the preface, is somewhat behind the types of professional practice obtaining in Pennsylvania and the Harz. Accordingly, he has gone to America and Germany for his illustrations, and he has been remarkably successful in both countries. In order to make his book the more valuable, Mr. Brough has added a set of questions originally given at the various recognised examinations. These will of necessity be of great use to the candidate in directing his mind towards those phases of the subject worthy of especial attention. The connection between the writer and the School of Mines has given him peculiar qualifications for the task he has undertaken. The attention he must perforce have given to the various modes of study in vogue at the school must have had considerable weight in determining the scope, plan, and style of the work. Perhaps the many characteristics which befit the treatise for the important office it is destined to fill in the mining world are referable to this all-important association of the author with the institution.

THE GHORBAND LEAD MINES IN AFGHANISTAN.

PAPER BY MR. A. L. COLLINS.

AN interesting paper on the above subject was read by Mr. A. L. Collins before a recent general meeting of the North of England Institute of Mining and Mechanical Engineers.

The author commenced by pointing out that it is perhaps natural, considering the present condition of the country, that little is known about the mineral deposits of Afghanistan; the remoteness of the country, and the unsettled and suspicious nature of its Government preventing any exploitation by outside capital, or even the investigations of the ordinary traveller. There are, however, several deposits which have been worked on a considerable scale to supply the local demand, almost from time immemorial; among which may specially be mentioned mines of lead, rock salt, and precious stones. Important deposits of coal, iron, asbestos, and other minerals are also known, but are at present practically unworked. The most considerable lead mines in Afghanistan are situated at Frinjal, in the Ghorband valley, about 50 miles in a straight line north-west from Kabul. The country around is bare and desolate in the extreme, the valley itself being 7000 feet above the sea level; while both north and south the mountains of the Hindu Kush and the Paghman range reach more than double that height. The climate is, however, pleasant; though a good deal of snow falls in the winter, it is never deep enough to seriously interfere with mining work, while grapes and almonds ripen during the summer in the more sheltered parts of the valley.

Judging from the extent of the old workings known—a series of large empty chambers and narrow irregular tunnels which can be followed underground for quite half a mile into the mountain—they must certainly have been worked in spasmodic Afghan fashion for hundreds of years. They seem to have been last abandoned during the unsettled times of the latest British occupation of Kabul, and were only reopened by his Highness the present Amir some six years ago. The country rocks are limestones and shales, striking east and west in about the same direction as the valley, and dipping from 10 degs. to nearly 30 deg. northwards. The lead occurs in a large fissure vein, having roughly the same strike and dip (15 degs. north) as the enclosing broad belt of limestone; the ore forms the cementing material of a breccia composed mainly of angular limestone fragments varying in size from the smallest piece up to large blocks many tons in weight. Closely examined, the ore is found to be finely crystalline galena, with small patches of iron pyrites and a little crystalline calcite, the whole being sprinkled confusedly through buff marly clay, which fills all the interstices between the limestone fragments; no galena clean enough to smelt without previous washing being found in the mine. In places a tendency towards a concretionary structure of the galena is noticed in the clay, which suggests the much more perfect little concretions of galena in the soft sandstone at Mechernich, Rhenish Prussia. It is noticeable that the larger limestone fragments are often surrounded by a thin edge of brighter clean galena, as if they had determined the deposition of the lead from solution. The brecciated fragments seem to be in actual contact with each other, as if they were all in position in the fissure before the advent of the lead-carrying solution; and though large surfaces of fine-grained galena and clay, up to 30 or 40 square feet in area, are often met with in the working faces, it is only where the fragments of the breccia are themselves large, or against the hanging wall of the deposit. The vein is very wide in places, some of the workings measuring over 30 feet from wall to wall; but there is a remarkable absence of cavities and of crystallised minerals; even secondary calcite, generally so common in such deposits, being comparatively rare. Nor is there any evidence of repeated reopening of the original fissure; the large amounts of marly clay found on some parts of the footwall, and mixed with the galena itself, being probably due to the forces which originally caused the shattering of the limestone in the fissure, and the subsequent partial solution of the impure limestone. This idea is supported by the appearance of the limestone fragments in the breccia, which are found on breaking to consist of unaltered hard bluish limestone in the middle, with a softer, whiter, and more decomposed envelope outside. There are many mineral springs in the immediate neighbourhood, apparently on the line of fissures, which are now depositing huge masses of travertine at the surface; the water being cold, faintly alkaline, and highly charged with carbonic acid gas. It is possible that such a spring of alkaline water originally deposited the galena in the Ghorband lode, dissolving out some of the pure carbonate of lime and leaving the insoluble clay behind; and that if the travertine caps of the existing springs could be removed it would be found that similar ore deposits are even now in course of formation.

The lode weathers at the surface to a well-defined ferruginous gossan, the lead disappearing, and the pyrites being decomposed so as to colour all the cementing material between the limestone fragments, the brecciated nature of the whole being still distinctly visible. This gossan can be traced at surface for over a mile, and seems to have been worked upon in several places; a few small specimens of cerusite were found in it by the writer, who was informed by the workmen at the mine that considerable amounts of that ore had at one time been treated. The mine is worked by the Afghan Government, a colonel from the army being in charge, at a salary equivalent to about £2 10s. per month. This official has, of course, no knowledge of mining. There are about 600 men kept working, half by day and half by night, and they are drawn in rotation from 1800 men of the whole district for 30 or 40 miles around, each man serving 10 days at a time. These men are all Hazaras, a race of small and active men of Mongolian type, who make cheerful and hard-working miners, a small guard of Afghan troops being, however, kept at the mines to prevent disturbances. The men agree among themselves where and how to work, each gang of 10 choosing a *dah-bashi*, or foreman, to arrange such matters, and to receive and divide the pay. The ore has to be brought out of the mine, crushed, and washed clean, ready for smelting, by the miners themselves, being paid for at the rate of one Kabuli rupee for four seers, or about 35s. per ton of 2240 lbs., out of which deductions are made for steel and oil. If fairly paid this would give something under 1d. per day to each man, as against the 3d. or 4d. which would be the proper pay, *e.g.*, of a soldier, but they are often cheated even of the balance fairly due by the Afghan scribes and officials; so that even the "tail of the cow," as they pathetically put it, is withheld from them. As a matter of fact, all seemed to bring their food with them to the mines when they arrived for their 10 days' service, putting very little faith in the possible pay.

The mine, which is quite free from water, is approached by an incline from the hill side, with a slope of about 15 degs., which seems to follow pretty closely the footwall of the vein. This soon opens out into a great chamber, over 54 feet long and 18 feet high, quite one-half of which is metalliferous cementing material, and which at present yields nearly one half of the ore obtained. Other workings ramify, up or down, in every direction from the chamber. All work is done with hammer and gad—a short-handled hammer of about 2½ lbs. weight, often little more than a cubical or somewhat oblong lump of iron, with a hole down the middle for the hilt, and a steel gad of from 5 to 10 inches in length, being commonly used. This practically precludes working in hard limestone, so that the old workings show the approximate shape of the ore bodies formerly met with. They are of necessity extremely irregular, varying from what are no better than rabbit burrows, along which it is difficult to crawl lying flat, to large irregular chambers, which fortunately keep open without timber or stowing. When any exceptionally large mass of limestone is met with in the breccia, the ore all round has to be laboriously dug out, and the boulder left underground, but, with this exception, everything broken is taken outside for treatment, no very difficult matter where each man breaks only a few pounds of stuff per day. Recently, blasting with gunpowder has been introduced in a few cases to break particularly troublesome masses of waste rock, the holes being bored by ordinary jumpers. But the Hazara miners are not paid for deadwork, and dislike the extra expense, and the Afghan officials perceive that the price paid for the ore could hardly be lessened, even if gunpowder were provided free of charge, so it is not much used at present.

The miners' lamps are of baked clay or dug out steatite, of the old Roman pattern, and are carried in the hand or rested on projecting corners of the rock, cottonseed or mustard oil being burned, with a wick of cotton rag. No attention is paid to the ventilation, so that in places where narrow and tortuous leaders (a foot or so in width) are being worked the heat is great and the air very foul. But the miners do not seem to suffer in health, as they arrange it so that no man works for long in the worst places. Moreover, the 20 days of freedom between each 10 days of work gives him time to recoup, as well as to cultivate the land around their villages, on which their living depends. In one part of the ancient workings an ingenious contrivance for improving the ventilation was noticed; the incline from the surface being made double, with a narrow bar of ground between, pierced at intervals as required. No account is kept of the amount of stuff broken underground; but the amount of washed lead ore bought daily by the smelting works is about 30 cwts.; and, estimating that this represents four times its weight of stuff brought out of the mine, it appears that each man only breaks 20 to 25 lbs. of stuff per day—an amount surprisingly small, even when the toughness of the ground, the inferior tools, and the extreme narrowness of many of the workings are considered. It must, however, be remembered that each man has to crush and wash, as well as to break, his own ore. Little or no handpicking is possible, so the ore brought out of the mine, which is already mostly in small pieces, is crushed by hand, a large stone being used as a pestle, on a flat beaten bed or another flat stone. It is then panned in a smooth wooden dish of about the same shape as an ordinary gold pan, but somewhat smaller (about 1 foot in diameter); the lighter waste, together with most of the slime galena, being washed away and lost. There is a certain amount of middle product, which is crushed and washed over again; but most of the concentrate is galena, fairly free from limestone and clay, but contaminated with a considerable amount of iron pyrites. It assays about 68 per cent. of lead and 1½ ounce of silver per ton.

Small amounts of lead ore are also obtained from the Chilian mines among the rough hills a few miles to the south of the Ghorband valley. The rocks here are clay slates and siliceous grits, lying nearly horizontal; these being cut through by many narrow veins striking north-west, and dipping 70 to 80 degrees south-west, corresponding to one of the jointings of the grits. These veins are generally only a few inches wide, the vein-filling being solid, large-bladed galena, with angular fragments of the country rock. The richer parts of the veins are followed up or down, wherever they may lead, and the workings are, in consequence, so narrow and tortuous that it is often most difficult to crawl or squeeze along them. The only tools used are hammer and gad, so that a pinch in the hard rock is an effectual bar to further progress, and for the same reason crosscutting underground is unknown, though some of the veins are only 2 or 3 fathoms apart. The writer saw work being done on a vein less than 2 inches in width, some of the slaty wall rock being perforce taken with the veinstuff, but the average would perhaps be 6 to 8 inches. In a few places, especially where the rock is siliceous grit, and the workings have an upward trend, the old process of fire setting is used, fires being lit against the face so that the flames play upon the rock, and cause it to split off in flakes. The mines being at an elevation of nearly 10,000 feet, there are no trees, and the only fuel obtainable is dried camels' dung, and a small prickly bush, which is common on the stony mountain slope, and which burns so quickly that it has to be continually replenished. The main objections to the process are the heat and smoke, all products of combustion having to find an outlet by the same tortuous channel, often less than 3 square feet in cross-section, by which the men can enter. The ore is brought to the surface in skin bags, which are pushed or pulled along by the miner.

The washed ore is smelted under the direct supervision of the Afghan officials, by men who give their whole time to the work, and are paid at the comparatively high rate of about 4d. per day. It is done in very small furnaces, and at widely scattered centres, on account of the difficulties of procuring fuel: the six furnaces at the mine treat only a quarter of the total output, and are considered mainly as a means of controlling the quality of the ore washed ore, assaying being unknown. The furnaces used resemble the Scotch hearth in principle, and are very simple in construction. A rubble wall, 5 feet long, 5 feet high, and 18 inches thick, is built along the hillside, in a position best adapted for carrying off the fumes by the wind, and a rough roof is carried from the top of the wall back to the hillside to shelter the workmen producing the blast. The actual furnace is a rounded cavity in the bottom of the wall, lined with refractory steatite clay, 18 by 14 inches by 7 inches, and is worked from the front. There are two tuyeres of clay, ¾ inch in diameter; the blowing apparatus being two sheeps' skins, each fixed to a tuyere by the neck and split open at the other end. The split ends of each skin are turned around two sticks of wood, by which they can be grasped, and opened or closed with one hand. A workman sits between the skins, taking one in each hand, and forcing them alternately backwards and forwards, the split ends being opened on the back stroke and closed when the extended skin is being forced forwards again, thus producing an intermittent or pulsating blast. The work is so hard that two men are necessary to keep a furnace going, relieving one another at short intervals. It is characteristic of the Afghan want of ingenuity that although there is ample water power in the valley close at hand, this cumbrous and inefficient method has never been improved upon.

The charge of a furnace is 20 lbs of ore, which is thrown damp into the hearth, still hot from the last charge, and a few sticks of wood are thrown in on top. The fuel used is exclusively dry soft wood, such as poplar and willow; harder woods like oak, mulberry, and walnut being said not to answer. The ore is frequently stirred and worked from the front with a thin poplar branch, and it is always covered with more or less wood. The flames and smoke come out in the front, much lead being lost in the fumes, which coat the front wall with yellow and orange incrustations and the ground around with fine, grey smoke, and, as is to be expected, the workmen suffer a good deal from lead colic. In one and a half to two hours the smelting of a charge is finished, the lead being reduced and the molten bath covered with a dry sinter in small lumps, containing many metallic shots. All is now scraped down with the stick, and the slag repeatedly and thoroughly stirred into the molten lead. Then the blast is stopped, the slag is scraped out, and the lead is ladled with a shallow iron ladle into little rounded depressions in the ground, the hearth being at once cleaned, when it is ready for a new charge of damp ore.

Each furnace smelts six such charges, or 120 lbs. of ore, per day of 12 hours, and it is worked by four men—one smelter, two blowers, and a man who assists generally by splitting wood, &c. Each charge (20 lbs.) of ore requires 24 lbs. of dry wood, and yields 7½ lbs. of good soft lead, or 37½ per cent. out of the 68 per cent. present. The balance is lost in fumes and in slags, for although the latter are crushed and washed for metallic shots, they still contain as thrown away nearly 50 per cent. of the combined lead. The ore from the Chilian mines is nearly pure galena, with quite 80 per cent. of lead; but when crushed and smelted in the same way it yields only half its weight, or 50 per cent. of the metal. This ore contains from 15 to 20 ounces of silver to the ton, but so little is mined that it is disregarded—indeed, the separation of silver from lead does not seem to be known to the Afghans. The total cost of a ton of smelted lead from these mines is, therefore, as follows:—Mining, crushing and washing 2¾ tons of clean ore at 35s. per ton, £4 13s. 4d.; smelting—labour, 1s. 3d. per 45 lbs. of lead, £3 2s. 3d.; fuel, 144 lbs. wood per 45 lbs. of lead, £2 4s. 3d.; superintendence, &c., 10s. 2d.; total cost per ton of lead, £10 10s. The total output is about 14 tons of smelted lead per month.

There are probably few places in the world where so many men are at work with so trifling a result, and at first sight no better field for the introduction of improvements could be found. But the introduction of European methods of mining would be impossible for political reasons. At present the Hazara miners consider the mines to be their own property, where they can work how they please, being bound only to extract a certain amount of ore at a fixed price, and any interference with the system would be resented. Moreover, European methods would mean the creation of a body of skilled men in constant employment, who would have to be paid a living wage of, say, 4d. per day, and so the cleaned ore could probably never be obtained for less than the present very low figure. It is true that the output could be vastly increased, but these and other mines already produce enough for the needs of the country, almost confined to the making of bullets, and there is a disinclination to export metal. Probably the most practical improvements in Afghan mining would be the introduction of the Cornish poll-pick, and extended use of blasting for breaking the harder and narrower parts of the lode, while simple machinery could easily be made locally for crushing and dressing the ore, so as to avoid most of the present loss in slimes.

But it is in the smelting that the greatest economies could be effected. By increasing the sides of the hearths, and using a water power blast the present absurd expenses of labour and fuel could be lessened; and with flues to condense the fume, and a slag hearth to resmelt the slags, a fairer percentage of metal might be saved. It will be understood that the unsettled political condition of the country has much to do with the backward condition of mining as the ignorance of the people. It is only as the country becomes more settled politically that the mining industry will be likely to improve.

MORE GOLD FROM THE MURCHISON.—Some ten weeks since we intimated that Messrs. Farquharson, Lovell, and Lewes were about to start for the Murchison gold fields, and that in the interests of the Adelaide Syndicate, of which they were members, they intended either to purchase or prospect for claims, or take them under offer to which they belonged. On Monday last one of the members of the party (Mr. W. H. Lewes) returned to Adelaide by the s.s. *New Guinea*, bringing with him about 3 cwts. of stone from a claim known as the Victory, which they have under offer for purchase. The property is situated about half a mile from the Day Dawn Mine, near the Cue, now being worked under the directorship of Mr. S. R. Wilson (formerly manager of the Broken Hill Proprietary Company). After an inspection of the property Mr. Lewes and his partners were so favourably impressed with it that it was decided that one of the party should immediately return to Adelaide to place it under offer with a view either to its purchase by the syndicate or for flotation into a company. The samples brought with him are now on view at Mr. Warburton's office, Cowra Chambers, Grenfell-street. They represent material obtained from the claim to a depth of 80 feet. The stone is of good quality, containing excellent gold throughout. That taken from what is known as the "dollying heap" is exceptionally rich, whilst in the bulk stone gold is richly disseminated. The casing or country rock also contains good gold. This is a favourable indication as the width of the formation varies; but we are assured that gold is contained in the stone through the whole of its course from the surface to the lowest depth tested, viz., 80 feet. Another important circumstance in connection with the property is that fresh water was struck at a depth of 52 feet from the surface, and it is now "making" at the rate of 1000 gallons per day. Mr. Farquharson, A.R.S.M., London, one of the members of the party, is most favourably impressed with what he has seen of the field, and Mr. Lewes assures us that no difficulty exists as to water supply either on the field or *en route* thereto from the nearest seaport, Geraldton.—*Adelaide Observer*.

AGNES GOLD MINING AND PROSPECTING SYNDICATE.—Messrs. Wilkinson and Harrison have completed the formation of the Agnes Syndicate (Hannan's Rush, Coolgardie), which consists of 240 shares of £20 each. The syndicate has acquired a 25 acre lease adjoining the Mount Charlotte and Mount Charlotte North Mines at Hannan's Rush. Captain W. H. Matthews whilst at Coolgardie inspected the Agnes Mine, and the syndicate has been formed as a result of his report. A shaft has been sunk 38 feet with favourable results. Mr. John Treloar (late manager of the Great Eastern Load Mine at Broken Hill) has been appointed to take charge of the syndicate's property. At a meeting of members of the syndicate, held at Mr. David Murray's office, the syndicate agreement, drawn by Messrs. G. and J. Downer, was adopted, and the following gentlemen were appointed a committee of management:—Messrs. David Murray, William Milne, jun., W. B. Wilkinson, Tom F. Wigley, C. Porter, and D. H. Braidwood.—*Addlaide Observer*.

MECHANICAL APPLIANCES FOR THE SHIPMENT OF COAL.—Mr. S. W. Allen read a paper, on Saturday last, before the Institute of Marine Engineers, upon "Mechanical Appliances for the Shipment of Coal." The author, having remarked that the greatest sources of the mineral wealth of Great Britain were her coal fields, passed on to describe the various methods of loading a vessel by precipitating the coal from a staith, erected on the river or dock side, through a large hopper, connected by a wooden tub or spout with the hold of the vessel—a system brought by repeated improvement and modification to a great perfection, but only applicable in cases where the coal was of a size and shape to run smoothly—by lowering the wagon bodily on to the deck of the vessel, and allowing the coal to fall directly into the hold; by filling tubs placed in a barge, and subsequently lowering them into the hold of the vessel; and by the use of balance tips. Various improved schemes had, he said, since be endeveloped. In conclusion, he expressed his belief that no better system had ever been employed for shipping the very fragile South Wales steam coal than the system of boxes introduced from 23 to 40 years ago, but so long as the demand for rapid shipment was so universal, he was afraid it would be impossible to return to this very excellent arrangement.

THE BROKEN HILL PROPRIETARY MINE.

HALF-YEARLY REPORT.

THE 17th half-yearly report of the directors of the Broken Hill Proprietary Mine, submitted at the meeting of shareholders, held on January 25, has the following:—

Smelting.

During the half-year your directors have been enabled to enter into satisfactory arrangements with the British Broken Hill Proprietary Company (Limited) for the lease of their furnaces at Broken Hill, and so far the results obtained have been of a satisfactory character—not only as regards the very appreciable increase in the weekly output of silver and lead, but also as to the costs at which such increase has been obtained.

Refinery.

Your directors have been for some time past in consultation with the general manager regarding the refinery, and after very careful deliberation have decided to make such additions to the present plant as will double its existing capacity. These additions will be so arranged that with a very slight extra expenditure a still further enlargement of the plant may be made should circumstances justify it. The very satisfactory results which have up to the present been obtained from this department have influenced your directors in arriving at this decision. In connection with this matter your directors have also under their consideration the question of the erection of a plant for the purpose of further treating the lead from the refinery—that is, by the manufacture of sheet lead, piping, &c. The cost of the plant referred to is comparatively small, and the results likely to accrue will be more than sufficient to justify the expenditure.

The refinery returns for 1893 show:—Bullion treated, tons—May, 10,994; November, 11,309. Fine silver produced, ounces—May, 2,857,722; November, 3,154,233. Gold produced, ounces—May, 1848; November, 1431¾. Cost per ton of bullion—May, £1 8s. 2¼d.; November, £1 12s. 1¼d. For 1892 the figures were:—Bullion treated, tons—May 1, 7969; November, 3725. Fine silver produced, ounces—May, 1,684,210; November, 729,825. Gold, ounces—May, 1352½; November, 473¾. Cost per ton of bullion—May, £1 14s. 6¼d.; November, £1 19s. 3d.

Concentrating plant.

It has been found necessary during the past few months to make arrangements for the removal of the concentrating plant from its old position, where it was becoming somewhat affected by the subsidence of the ground immediately beneath it. This plant is one of the most important branches of the metallurgical department, and although in the past the results obtained have not been altogether satisfactory, nevertheless the plant as it exists has been of very material assistance in treating certain classes of ore which it was impossible to reduce by any other process. A large portion of the machinery will require renewing, owing to the length of time it has been working; and while doing so advantage is being taken by the general manager of introducing machinery of later and more modern construction, which, it is anticipated, will give much more favourable results. In addition, several important alterations are being made as to the arrangement of the machinery, which will be erected in sections, and this, when carried out, will allow a portion of the plant to be shut down for repairs without necessitating the closing of the whole. The old mill is now being pulled down, and the re-erection of the plant upon a new and more convenient site is being pushed forward with all possible speed.

Steam supply.

Arrangements have at length been completed with the Slag Steam Generator Company for the purchase of their patents for use in the whole of the company's works. The patent consists of a mechanical contrivance whereby the hot slag coming from the furnaces, the heat of which at present runs to waste, is utilised in generating steam by passing through a series of tubes specially arranged within a boiler, and thus saving a very large proportion of the coal at present consumed in producing the necessary amount of steam required to work the various plants. The agreement that has been entered into fully protects this company's interests, as it provides that an experimental plant shall be erected and worked for a period of six months, the completion of the purchase depending entirely upon satisfactory results being obtained; and from the reports the directors have received from their officers there would appear to be little doubt that such results can be obtained which will show a considerable saving.

Chloridising plant.

The chloridising plant, consisting of ten furnaces, has so far approached completion as regards six of them as to enable these to be put in blast for a preliminary trial. It has, however, been found necessary to effect certain changes as to the mechanical arrangements for the handling of the ore, which alterations are now in course of being made; and as soon as these have been satisfactorily arranged and proved by results, the completion of the balance of the furnaces can be easily and expeditiously carried out, the whole of the machinery being on the ground, and the foundations already laid.

The mine.

Several discoveries of an important nature have been made during the past six months, principally in regard to carbonate of lead ore, of which a valuable and independent body has been opened up parallel to the main lode, and in the vicinity of Darling shaft, thus adding considerably to our reserves of this class of ore. A cross cut to the west was driven from the 800 feet level, McBryde shaft, and at 110 feet work was stopped by a very heavy flow of water, showing that the lode had been reached, but, so far, the water has been too strong, and has consequently prevented anything being ascertained as to its value. Work in connection with the open cut is being carried on systematically, and has been still further extended, and an enormous quantity of ore has been obtained from this source at a low cost, thus considerably reducing the cost of production per ton of ore. Although the whole of these operations are being pushed on as quickly and as vigorously as they can be, yet, after 13 months' work, they are only down 50 feet, so that it will still take some considerable time to reach the 200 feet level as intended.

Financial.

The balance-sheet presented shows that the finances of the company are in an eminently satisfactory condition, the many and various economies made during the half year having effected a substantial reduction in working costs, thus minimising the loss sustained through the fall in the price of silver. The net profit for the half year amounts to £453,632 17s. 3d., out of which sum £288,000 has been distributed in dividends and £30,000 added to the reserve fund, thus increasing it to £110,000. On November 30 the liquid assets, less outstanding liabilities, amounted to a net sum of £398,410 8s. 10d., comprised of the following items:—Coke, £24,132 11s. 10d.; mine timber, £24,609 11s. 7d.; stores and sundries, £46,912 15s. 10d.; sundry debtors, £4432 3s. 7d., equal to £100,087 2s. 10d.; bullion on hand, £184,166 1s. 1d.; bank balances, £119,992 19s. 10d.; bullion surpluses as per cable advices, £54,680 1s. 2d.; reserve fund, £110,000, equal to £468,859 2s. 1d.; bullion *in transitu* to London, £418,450. Less outstanding liabilities—Drafts against bullion *in transitu* to London and surpluses, £515,000; London, 78th dividend, £20,949 5s.; sundry creditors, £53,036 11s. 1d., equal to £588,985 16s. 1d. Total, £398,410 8s. 10d.

The general manager's report.

The general manager, in his report, states:—The operations of the company have proceeded uninterruptedly and very successfully during the half-year; a much larger quantity of ore than hitherto has been mined and treated, and the output of silver and lead has greatly exceeded that for any previous six months. Some important ore discoveries have been made underground during the half-year, which are valuable, not only for the large quantity of excellent lead-fluxing ores they have produced, but important, also, from the fact that the principal discovery, with its relative position to the main lode, indicates that other similar bodies of ore, of which we know nothing at present, are likely to be found. The stopes in the main lode have been yielding very well, continuing to show large breasts of ore, and by reducing the average value of the ore going to the various metallurgical works we have been enabled to mine and reduce medium and low-grades ores which years ago were passed by. This has permitted us to husband our rich ore in order to equalise and maintain a weekly uniform output of silver and lead, and, by a strict adherence to this system of working, I am pleased to say we have not during the past half-year been compelled to draw very heavily on our richest ores.

The open cut and quarrying.

In regard to the open cut and quarrying the manager says:—This branch of our mining has been pushed on vigorously during the past half-year. The question may be asked, "How, then, is the mine to be worked after the open cuts have reached the depth to which they can be successfully carried down?" In answer to this I would say that below the water level, which is above the 300 feet level, the lode assumes a more vertical position, the walls of the lode are less decomposed, whilst the formation generally is more solid. The sulphide ores are also firm and dense, so that ordinary timbering with some filling will give all the support that is required at greater depths. During the six months there have been extracted from the open cuts and surface workings fluxing, silicious iron, smelting, concentrating, and milling ores. There is a considerable increase this half-year in the quantity of silver contained by the silicious iron ore, and the remark applies also to other classes of smelting ores produced from these sources. I may here give the average assays per ton of the ores extracted:—Silicious iron ore: Lead, 12·86 per cent.; silver, 27·10 ounces; iron, 19·10 per cent.; manganese, 12·37 per cent. Iron fluxing ore: Lead, 13·29 per cent; silver, 5·56 ounces; iron, 14·56 per cent.; manganese, 25·43 per cent.

The milling and concentrating ores from these parts have varied from 14 to 22 ounces silver per ton. At the south end of block 11 the great bulk of the overburden of waste material covering the ore body to a depth of about 90 feet has been removed, and on the east side the surface cuttings for a short distance have reached the lode. We shall shortly be able to remove the remainder of the waste material as fast as we will want to extract the ore. By the beginning of the year the old railway viaduct will have been removed from the croppings of the lode, and quarrying and open cut work will be commenced between Knox old and McBryde shafts. There has been produced from the open cuts during the half year in all 101,912 tons of ore, which has been disposed of as follows:—Shipped to Port Pirie, 7045 tons; sent to ore dressing mill, 21,452 tons; sent to amalgamating mill, 6821 tons; sent to local furnaces, 44,594 tons; on hand at the mine for future treatment, 22,000 tons. The cost of extracting this ore has been £50,384 8s. 6d., or 9s. 10½d. per ton, which is less than this work cost last half year by about 2s. per ton; and it should be mentioned that during the past six months we have had to do a great deal of dead work in connection with the operations, the cost of which, although included in the above sum, has no ore directly credited to it. We have recovered 343,421 superficial feet of mine timber, representing a value of about £2400, which should be taken into account, to say nothing of the important advantages we have realised in our smelting operations by using our own iron ore for fluxing in the whole of the furnaces, both here and at Port Pirie, instead of purchasing outside ironstone; these advantages I have explained in previous reports. I should mention here that there is not included in the above the amount paid to Mr. M. C. Davies (£10,256 8s.) for removing the waste material at the south end of Block 11; but as no ore has yet accrued therefrom the cost of this work cannot be debited to ore as in the case of the other surface contractors. I have said that we have now reached the lode in a part of these workings, so that in future this cost must also be brought to account against the ore.

During the half year 260,047 tons of ore have been treated, showing an extract of about 10 per cent. of lead, and 25 ounces of silver per ton, and producing 333 tons of copper (in matte), 25,822 tons of lead, 1431 ounces of gold, and 6,533,232 ounces of silver.

The ore dressing mill.

The ore dressing mill, or concentrators, has treated 21,452 tons of crude ore, producing 5005 tons of concentrates, but has had lately to be shut down. The mill had been in active service for over five years, and had become pretty well worn out. Moreover, it will be remembered that it was located right on the croppings of the lode, and it became necessary to remove it out of the way of surface quarrying operations. A new site has been selected to the south, near the chloridising works on the western side of the new railway embankment, the slope of which affords the required fall, and it is intended to erect here a new plant of a different character to the old one, which will be more suitable for the treatment of the ores from the Proprietary Mine, and which will be constituted so that it may be adapted to the dressing of our sulphide ores. A great deal of material from the old plant, such as engines, shafting, jigs, and other important parts, will be used in the new works, which have been started.

The amalgamating mill.

The amalgamating mill has treated 12,280 tons of ore of an average grade of from 14 to 22 ounces silver per ton, producing 201,091 ounces of silver. During the early part of the six months, and for a considerable time, the mill was running on what can only be spoken of as "refuse" ore, the same having been thrown aside several years ago, but gathered up now and treated. Although cast away previously as of too low a grade to deal with, this ore has now yielded a fair profit in the mill, but the effect of treating it has necessarily been to reduce the output from these works very considerably. However, as even with the low price of silver, this ore could be made to pay, it was thought better to treat than to discard it. It is hoped that during the ensuing half-year better ore will be handled, when, of course, a large output will be made; but so long as the surface works produce a low grade of ore suitable for this process we shall handle it if a reasonable profit can be made to accrue.

The new furnaces.

The new furnace, making five in all, at the Port Pirie Smelting Works was put in blast during the first week of the half year, and the whole have been working satisfactorily ever since. Some necessary extension of the elevated railway and flux landing was made to expedite handling of the ore and fluxes. The results are:—Ore treated (dry), 44,669 tons, producing—lead, 4119 tons; copper (in matte), 63 tons; silver, 1,166,669 ounces. The ore consisted of lead ore, 14,069 tons; kaolin, 11,073 tons; silicious iron, 17,806 tons; copper ore, 62 tons; concentrates, 1659 tons. There is on hand at present 24,890 tons of ore, the railway freight upon which has been paid to a value of £20,534 19s. 5d. There is also remaining in stock 1451 tons of purchased ironstone.

The refinery works.

The refinery works have operated constantly and successfully during the six months, and are now in good order. The quantity of bullion refined amounts to 11,309 tons, or equal to an average weekly capacity of 435 tons. There has been dispatched from the works and (or) is on hand 11,335 tons of soft lead, 237 tons of copper (in matte), 1578 ounces of gold, and 3,284,508 ounces of silver. The cost of refining this half year works out to £1 12s. 1¼d per ton of bullion, or slightly in excess of the cost for the preceding period. This is accounted for by our having sent to the refinery recently some rather base bullion. I might explain that previously the refinery received the same character of bullion as was shipped to England; but in order to be certain that the English buyers should receive only the very best portion of our product we erected on the mine a small furnace, known as a "sweating" furnace, for the purpose of removing most of the impurities; and the product of the skimmings from this sweating furnace, which carried the great bulk of the base bullion, was all sent to the refinery; and the quantity of antimony and other deleterious matter increased the cost of refining by about 4s. per ton of bullion over that for the previous six months. The gold recovered (for which we receive no allowance if in the bullion when purchased in England) amounts in value to about £5650. The blast furnace there has, in addition to working up the by-products from the refinery, treated:—Ore (dry), 5513 tons; producing, lead 319 tons, silver 218,346 ounces. The ore at present on hand at these works amounts to—Kaolin, 218 tons; lead ore, 333 tons; silicious iron, 580 tons; copper ore, 20 tons; sulphides, 101 tons; or 1252 tons in all, the freight per rail on which has been paid amounting to £1032 1s. 6d.

Treatment.

The cost of treating ores per ton in the several smelting departments for the half-year has been as follows:—Port Pirie Smelting Works, 18s. 2¾d.; Port Pirie refinery furnace, £1 4s. 5¾d.; mine furnaces, £1 7s. 10d.; furnaces rented from British Company at Broken Hill, £1 3s. 1d. It will thus be seen that the cost of smelting ores this half-year has been considerably less than for any previous period.

It has been decided to double the present working capacity of the refinery, and plans and specifications are now being prepared for the necessary machinery, which will shortly be ordered. But slight additions to the present refinery building will be required, and no additional power will be needed. Works for the production of lead products and for the treatment of matte and other secondary products are contemplated, and are now under consideration.

The matter of the treatment of sulphide ores will be taken up during the ensuing half-year, principally on the lines that I have been advocating for the past two years, viz., concentration and smelting the high-grade lead concentrates. I do not think that all our sulphides can be successfully treated by this process, but I feel confident that a large portion of them can, and steps are being taken to work such portions of the sulphide ore as can be profitably dealt with by the above described process.

COLLIERY VENTILATING MACHINERY.

LECTURE BY MR. C. M. PERCY, F.G.S.

MR. C. M. PERCY, F.G.S., lectured last Saturday, at Nottingham, on "Colliery Ventilating Machinery," before a large audience.

The Lecturer commenced by saying that it was only by efficient ventilation of our collieries that they could be worked, and upon that efficiency of ventilation depended the safety of the hundreds of thousands of persons who were employed underground. He did not propose to deal at all with underground arrangements, or how the air currents should be distributed and directed, but simply with appliances for the production of the volume of air. Nor did he propose to speak against furnace ventilation as being ineffective. He believed it had in its time rendered eminent service; indeed, at one period, there was practically no other system equal to the requirements of extensive collieries, and our collieries would not have been worked without it. Furnaces were a source of danger even under ordinary circumstances, owing to the injury caused to the shafts and the products of combustion given off in the shaft and at the surface. The lecturer then passed on to speak of mechanical ventilation. He believed that one of the first attempts at a ventilating machine, on anything like a large scale, was the Struve ventilator. This consisted of large pumps like small gasometers attached vertically at the ends of two beams, the opposite ends of which received motion from a steam engine piston. The Struve ventilator now simply existed as a relic of the past and a pioneer of better things. The Nixon appliance was of a somewhat similar character, working, however, horizontally. Another class of ventilators came under those known as definite volume exhausters, which sweep out a fixed volume of air each revolution. This class was exemplified in the Lemielle, the Fabry, the Cook, and the Root, but all of these appliances proved only moderately effective, were very cumbersome, and were liable to get out of order, which prevented their coming at all extensively into use. By gradual stages they arrived at the third and most important, and now practically universal, ventilating machine, known as the fan, which acted upon the centrifugal principle. The special advantage which attached to all ventilating fans was that there were no valves or clacks, and no levers or rods, and no pumps or pistons. There was simply a revolving wheel which was always working in one direction, and consequently, if well made, could run practically at any speed, and, as the effect of the fan was produced by centrifugal force, this was, of course, an enormous advantage. In dealing with appliances on the centrifugal principle the lecturer said he would just like to mention that the action of all fans was based upon a great law of nature, under which bodies in motion tend to travel in straight lines. The consequence was that when a fan was set in motion the blades came in contact with the air within the fan, and the particles of air resist the rotation of the fan and endeavour to travel off in straight lines, therefore making for the circumference. As a result a partial vacuum was produced within the fan, and the air from the upcast shaft rushes in to fill the vacuum, and so a current is produced and maintained. Centrifugal ventilators might be divided into two great classes, namely:—(a) those which are called "open running," discharging their air all round the circumference; and (b) the class known as "closed fans," which are not free to discharge their air into the open. Amongst open running fans the first that came into use was one made by Nasmith, the distinguished engineer; another followed, made by Brunton, working horizontally on a vertical shaft fixed at the pit mouth. Others made by Biram, Waddle, Marsden, and Hopton in recent years had been very successful in dealing with large quantities of air at extensive collieries. Then with respect to "closed fans," there was the Guibal, Cockson, Walker Schiele, Indestructible, Capel, Johnson, and Rateau, each of which was doing useful work in ventilating mines both in the United Kingdom and on the Continent of Europe. The lecturer then went on to compare the principles of the classes of fans already mentioned, and the advantages claimed by their different inventors, but he said he did not propose to enter into the vexed question of similar fans under different underground conditions producing different efficiencies. A fan to be efficient, and give a good "useful effect," should be well supplied with air, and it mattered not how well designed a fan might be, and however well constructed, it could not exhaust air which was unable, through no fault of the fan, to enter it. The quantity of air that reached the inlet of the fan must evidently depend on the passages underground. In conclusion, the lecturer said for further improvements in the production of great volumes of air, with a comparatively small expenditure of coal and of power, they would have to look, not so much to the improvements upon our present fans, as improvements in the arrangements of the mine itself.

A vote of thanks to the lecturer concluded the proceedings.

MANY BRILLIANT PROSPECTUSES that are frequently issued to financiers often herald the formation of companies which go up like the proverbial rocket and come down like a stick. With reference to their prospects of success we may quote the time-worn saying, "all is not gold that glitters." Holloway's Pills and Ointment, unlike such shaky ventures, are the soundest investment in which people suffering from disease can entrust their money. They have the reputation of over half a century, and return substantial dividends in the form of good health. No disease has yet disputed their influence when a fair trial has been given. They cure weakness, liver and kidney diseases, whilst for skin diseases they have no equal.

MEETINGS OF MINING COMPANIES.

AGNES BLOCK.

An issue of preference shares to be made.—Extension of operations.

AN extraordinary general meeting of the Agnes Block (Limited), was held on Tuesday, at Broad-street Avenue, E.C., for the purpose of considering the following resolution:—

That the capital of the company be increased to £91,000 by the creation of 10,000 new shares of £1 each, to be called preference shares, to which shall be attached the special rights and privileges following, that is to say: (a) The holders of such preference shares shall be entitled to receive out of the profits of the company, as a first charge, a cumulative preferential dividend of 10 per cent per annum on the amount for the time being paid up on the preferential shares held by them respectively, such dividends to be payable half-yearly. (b) In the event of the winding up of the company, the holders of the preference shares shall be entitled to have the surplus assets applied, first, in paying off the capital paid up on the preference shares held by them respectively, and all arrears of dividend thereon, and thereafter to participate, rateably, with the holders of other shares in the residue (if any) of such surplus assets which shall remain after paying off the capital paid on such other shares

Mr. J. A. TRAVERS occupied the chair.

The SECRETARY (Mr. C. Jones) read the notice convening the meeting.

The CHAIRMAN, in moving the resolution, said:—Gentlemen, I think you have all received the circular that was issued with this notice of meeting, explaining the reasons that have weighed with your directors in asking you to agree to an increase of the capital of the company by the creation of some £10,000 ten per cent. cumulative preference shares; but it may, perhaps, be well for me to go through the points a little more fully. Since the last meeting we have received full plans and particulars of the Nottingham Quarry Mine—that property which I was able to congratulate you upon having acquired when last we met. Of course, then, as I explained to you, we had not the full particulars, nor were we in a position to do anything except to say that we were sure that you had acquired, at a very cheap rate, a most valuable property. We contemplated then working the two companies somewhat together Since, however, we have received the plans we find that there is a longer distance between the two properties than we had understood, and that makes it necessary to look upon them as two rather than as one. There are several properties between the Agnes and the Nottingham Quarry. There are the Nottingham, the Ivy Extension, the Woodward Walker's, and the Woodward Woodbine, and then we come to a newly-acquired little property, which lies between the Snowdon and the Highland, and very close to the Ivy, which is at present well paying and well known. In fixing the capital of the company originally at £80,000, of course we took regard only to the one property we had then to deal with, and, so far as that £80,000 goes, and the Agnes property goes, I am able to confirm, if it were needful, what was said at our previous meeting—that we had money enough in hand for the Agnes, and more than enough. We should have no need to suggest to the shareholders an increase of capital had it not been for the prosperous state of affairs in Barberton just now. The railway is, as you know, approaching close up there, and that will lead—and has already led—to a very considerable increase of business in mining properties. Numbers are being taken up, in addition to which the Government has done its part in the matter, by insisting either upon work being done upon a number of claims that were taken up some years ago, or a higher rental being paid, in order to attract investors, and let them see that the country is good. This does not especially apply to Moodie's, but the prevailing movement does affect Moodie's, and the amount of electric power available, which we are looking to from the Moodies, is, I understand, at present only about 250 horse power. Now, if we are not early in the field in our application for a portion of that horse power, we may find ourselves left out in the cold. There is also the question of water. The supply of water in the neighbourhood is limited, and if we are not in a position to obtain that, we may lose our chance also. These matters, as well as the fact that we would like to have more business in our own hands, point to developing and going ahead with both properties—the Agnes and the Nottingham—at once; and it is for the proper development of the Nottingham Quarry in particular that we ask your assent to the creation of £10,000 10 per cent. cumulative preference shares. If work is not done, and done satisfactorily, to a considerable amount, we shall not get our chance of obtaining the power that we shall require to work our battery, and we may have difficulty about our water; so that your directors recommend very strongly the setting to work at the Nottingham property while, at the same time, we are going on with the Agnes. You have Mr. Howse's reports from the mine, and he corroborates them in every letter, and in his telegrams he confirms the value of the Nottingham Quarry property. The mill that we bought with the property is situated in an extremely awkward position; it is some 1300 feet below the level of the Nottingham Quarry property, and there is a mountain intervening, which is the reason the former proprietors attempted to put up an aerial tramway. This, however, they found awkward to work at such a distance. We should propose to put up our battery in close proximity to the one in the Nottingham Quarry property, and work the stamps by electricity. I think that covers the ground so far as the Nottingham Quarry is concerned. As to what we shall do with the mill that is there now, we are waiting further information from Mr. Howse. It will be of distinct value to us, but not for our Nottingham Quarry property. In all probability that will come in useful for us at the Agnes as soon as we are in a position to begin crushing, when we have enough ore in sight, by the development of our drives and cross-cuts. I need not point out to you that, with the two mines in hand, you have two strings to your bow, and that larger dividends will, we hope, be earned by going to work at both at an earlier period. We could, of course, form a subsidiary company for the Nottingham Quarry; but that does not recommend itself to your directors so much as this course of obtaining some extra capital and working the two things together. A certain amount of the standing expenses—I mean the salaries—will, of course, be economised by working under one manager; for the properties are near enough together for one manager to overlook both and take them in charge for some time. The preference shares, I venture to hope, will be largely taken up by our own shareholders, and they will be in the first event, of course, offered to them before inviting subscriptions from the public, and I should hope that the proportion left for the public will be very small indeed. The news from the Agnes is satisfactory, and we had expected by this time to receive a telegram to say that the reef we are going for in the 450 feet level had been cut. We have not received that yet; but it may be that there has been some slight dislocation in the reef. As, however, we are going a little further in, we shall be compensated by having a proportionately larger amount of ore to deal with above us. The ore shaft that Mr. Howse is sinking to make the working at the 150 feet level easier should by this time be down to the level required. As soon as that is the case he proposes to work on the reef, and follow it downwards and westwards from the 150 feet level, and then from the 450 feet level. When he has found this reef he will work upwards; so that we shall be working at the reef at both points. I think, gentlemen, I have put all before you now that is necessary for you to understand the bearings of the case, and I will conclude by moving the resolutions that you have heard read, and I think I may be allowed to move them *en bloc*.

Mr. LITTLE seconded the motion, asking whether the preference shares would be issued at par.

The CHAIRMAN replied in the affirmative.

Mr. LITTLE further enquired whether, in the event of a liquidation, paragraph (*b*) would be carried out.

The CHAIRMAN replied that such was the intention. The paragraphs would be registered as an agreement, and could then be put into affect.

The resolution was then put and carried unanimously.

The CHAIRMAN remarked that though the number of shareholders present was small, the board held proxies from nearly all the shareholders who were not at the meeting.

The CHAIRMAN, in acknowledging a vote of thanks, read a report just received from Mr. Howes, dated January 31st last, as follows:—"I have tested the reef known as the Lester lead, in a shaft just outside our western boundary, where, at a depth of about 80 feet, the ores assay 1 ounce 11 dwts. to the ton."

The proceedings then terminated.

BALAGHAT MYSORE GOLD MINES (LIMITED).—An extraordinary general meeting of the shareholders in the Balaghat Mysore Gold Mines (Limited) was held on Monday at the offices of the company, 6, Queen-street-place, under the Chairmanship of Field-Marshal, Sir Frederick Haines, for the purpose of submitting for confirmation resolutions passed at a previous meeting, winding up the company with a view to reconstruction. The resolutions were submitted, without comment, from the chair, seconded by Mr. Ogle, and carried unanimously.—Mr. John Taylor said a letter had been received by the Indian Mail that morning from Captain Prior, dated February 7th, in which he spoke of the continued improvement at Tennant's shaft. They knew how very important the particular work was to the company at the present moment, and he might read an extract from the document, as follows:—"Besides deepening this shaft 10 feet 3 inches it is now 39 feet below the 285 feet level. We have also been engaged putting in the necessary timbers for breaking the underlie as well as proceeding with the putting in of the sets of timber in the vertical part of the shaft. I am delighted to say that the lode is still showing signs of a steady improvement. The quartz averages fully 2 feet 6 inches wide, the last assay (taken yesterday) being 11 dwts. 4 grains, and this is fully confirmed by a panning from another sample just brought up. I trust the lode will go on improving, and that we shall soon get it on an equal value to some other mines on the Champion Reef."

PHŒNIX UNITED MINES.—A general meeting of the shareholders of Phœnix and West Phœnix United Mines was held at Webb's Hotel, Liskeard, on Thursday, Mr. Polkinghorne (purser) being in the chair. It was resolved unanimously—"That the accounts now produced, showing a debit balance of £2247 14s. 4d., be allowed and passed;" "That the committee be and are authorised to take steps to register a company of Limited Liability, in further pursuance of the scheme submitted by circular to the shareholders, to which 'approvals' by shareholders holding 9216 shares have been received;" "That the agents' and committee's reports now read be received and adopted and circulated amongst the shareholders;" and "That the committee be re-elected."—The aforesaid meeting was made special for the purpose of forfeiting certain shares on which the calls had not been paid.

MINING IN THE ARGENTINE REPUBLIC.

A Scheme for the exploratory survey of the Republic.

INVESTORS in Argentine mining enterprises have no cause to cherish pleasant recollections of their experiences, but the Argentine Government, at all events, has no intention of "throwing up the sponge." We extract the following interesting announcement from *La Prensa*, of Buenos Ayres—the leading native journal of that city—bearing date the 23rd ulto.:—

"The Director-General of the National Department of Mines and Geology submitted yesterday to the Minister of Finance an important scheme for an exhaustive exploratory survey of the whole Republic. Hitherto, he says, the want of funds has forbidden any active search after the minerals of the country, but the money recently voted by Congress for explorations in 1894 comes in opportunely for carrying out a project long entertained. The Republic should be divided into sections, each section in charge of a mining engineer of the department under the direction of the chief. The scheme embraces the drawing up of plans of the mineral districts, their geological formation, statistics of the mines at work and those unworked, plans of the workings, a description of the mineral produced, the exportation of minerals, mode of communication, &c., the whole to be afterwards published in the form of an elaborate report. It is anticipated that the project will take a year to carry through. Another object is to complete the collections in the Mineralogical Museum. The impoverished condition of the various Provincial Governments prevents them from undertaking the work, but the National Department of Mines, without invading their rights, would supply their deficiencies and render them a service by making known to foreign capital the truth as to our mineral wealth. Foreign capitalists hesitate to risk their money in costly machinery for problematical enterprises, but when the National Department offers them evidence, in reports and museum exhibits, of the mineral resources of the country, they have a smooth and safe course before them. The Government made vigorous efforts in 1868 or 1869 to do what is now proposed, and Mr. Rickard's book, which was the outcome of those efforts, imperfect as it is, has served as a standard work on the subject, till later and more complete investigations, such as those now in view, render it obsolete. We know that the Minister of Finance is disposed to give the matter serious consideration, under a just impression that the mines of the country can contribute to the national wealth."

The experiment, we need hardly say, will be watched by all mining men with keen interest, and we trust that the Department, in making the suggestion, is actuated by thoroughly upright motives, and is not merely seeking to find salaried employment for some of its needy members. We mean no offence, but the Argentine Government has, by its recent acts, laid itself open to such a suspicion. And we take leave to question whether the reason assigned for the hesitation of foreign capitalists to exploit the country is the true one. The Argentine Government has, since the crisis broke out in 1890, developed an irritating tendency to harass foreign undertakings in the country by levying special taxes on them, and in other ways. Only last week we learnt of the establishment of a new inspectorship of public companies, involving a further tax in the shape of the salaries of the inspectors. Again, a large amount of foreign capital has already been sunk, beyond redemption, in Argentine mines. As early as 1824, an English mining company, the Famatina, started operations, but, after a chequered career, ended disastrously. And so, also, did another company, formed in 1861, in Buenos Ayres, which brought out machinery from England to work the silver mines of Tantal, in the province of San Juan. There has been no lack of adventurers, for we gather from the report of the Director-General of Mines for 1892, that there are in existence 2000 concessions from the Provincial, and 1500 from the National authorities. The most successful mining establishment of the present century in the Argentine Republic is the copper mines of Mr. Lafone Quevedo, in the province of Catamarca, which have been worked now for over 30 years. We may add that nine out of the 14 provinces of the republic show unmistakeable evidences of minerals—chiefly silver and copper. The gold mines of the ill-fated West Argentine Company, and their equally unfortunate off-shoots, were situate in the province of San Luis. According to the Director-General's report of 1892, the province of San Juan will one day be a great centre of mining industry. The value of minerals exported from the republic in 1891, was £250,000, of which silver amounted to £190,000, lead to £20,000, copper to £8000, and sundries to £32,000.

COMPANIES AND THEIR DOINGS.

Reports, Balance Sheets, Dividends, &c., of Mining, Railway, Banking, and other Companies.

MINING COMPANIES.

La Plata Mines.

THE following circular, dated February 24, has been issued to the shareholders:—"You have from time to time been informed of the progress made in connection with the working in the Mozambique territory. Since then news has been frequently published in the financial and mining papers, and much interest excited in the prospects of your company in the gold mining branch of its business, carried on under the auspices of the Gold Fields of Mozambique (Limited), in which your company holds a preponderating interest. Mr. Niness, the agent of the Gold Fields Company, has pegged off a considerable number of the claims to which the company has acquired the right, free from the usual licenses and rents. After his preliminary tests of the reef claims, now constituted as the Lion and Tiger properties, he describes them as "the pick of Massi Kessie," and further states that, in his opinion, the district in which these properties are situated "will eventually prove second to none for mineral wealth yet discovered" in the Mozambique territory. Conclusive proof of the existence of gold on these properties has been furnished by Mr. Niness and by Mr. Charles J. Alford, the well-known mining engineer, who examined and approved the selection of the Lion and Tiger claims, and upon whose report and recommendation the proposed expenditure on the Lion property is to be made. Mr. Niness has also pegged off 10 claims in another part of the country, north of Massi Kessi, in respect of which he writes:—'Out of 15 pans I did not get a blank—that is to say, the whole lot panned gold, a proof that the gold is equally distributed in the quartz. The whole ridge I have pegged out is thickly covered with good mine timber, and is in close proximity to the Lohamcarana river.' Assisted by two old Australian diggers, Mr. Niness has selected some alluvial claims of great promise on the Zambuzi river. He reports having taken pannings from this alluvial yielding up to 1 ounce of gold to the ton. These particulars are of the utmost importance to La Plata shareholders, and your directors are convinced that their bearing on the fortunes of the La Plata Company will be of a most beneficial character. Your attention is invited to the prospectus (which follows under separate cover) of the first offshoot from the Gold Fields of Mozambique (Limited) to be called, when incorporated, the Lion Company. The floating of this company will enable mining work to be carried out on the Lion property, pending the completion of the railway to Massi Kessi, without the necessity of making a call on La Plata shares for the whole of 1894. In addition to this boon, your directors have made arrangements which enable them to offer a distribution of fully paid shares of the Gold Fields of Mozambique (Limited), and of the proposed subsidiary company, amounting to 50 per cent. on the shares taken up in the Lion Company; so that La Plata shareholders subscribing for these shares will participate in securing at once 1500 shares in the parent company, embracing 100 gold claims (sufficient for a number of subsidiary companies), and 1500 fully paid Lion shares, in addition to the shares for which they may subscribe in the Lion Company. It may be pointed out that each 2s. instalment of the first half of the subscription is less than a ½d. per La Plata share, payable at intervals of two months, extending over a period of 8 months. The other half is not payable until after the expiration of 1894. Every holder of 250 La Plata shares may apply for four Lion shares of £1 each. Such four shares will receive two fully paid shares of £1 each, being one in the Gold Fields of Mozambique (Limited), and the other in the proposed Lion Company, and so on in proportion, cost free, and without liability. Applications may be made for more than the *pro rata* allowance, and the excess number will be allotted if sufficient shares are available. Any shareholder, whatever the amount of his holding in La Plata, is entitled to apply for Lion shares on the aforesaid terms. For reasons clearly apparent to your directors, it is anticipated that La Plata shareholders (already a large and influential body) will receive a considerable accession of strength by the carrying out of the plan herein set forth, and that the market for the shares will be favourably affected when the position and prospects of the company become known. Referring to the business in Colorado, the directors have the pleasure to state that, in spite of the low prices of lead and silver, the Leadville Mines have been self-supporting during the past year. A more favourable result is anticipated for 1894, in consequence of a proposal for leasing the mines, now under consideration, on terms that will yield a revenue, and at the same time relieve the company from all outlay at Leadville during the lease. The property at Leadville would thus be properly safeguarded, and kept in good working order, during the depression in prices of lead and silver. In regard to the financial position, the company has, apart from the balance in hand, a reserve of £15,000 uncalled on its share capital. The La Plata Company owns 37,992 shares of £1 each (of which 17,992 are fully paid) in the Gold Fields of Mozambique (Limited). La Plata is not in debt, and there is no mortgage on its property or funds; on the other hand, much is expected from the company's large holding in the Gold Fields of Mozambique (Limited)."

New Aurora West Gold Mining Company.

In the report of the directors of the NEW AURORA WEST GOLD MINING COMPANY (LIMITED) for half year ending 31st December, 1893, the following passages occur:—The accounts presented show a loss of £5167 10s. 10d. on the working for the half year after writing off a sum of £3894 17s. 6d.—viz., £1497 9s. 2d. for depreciation on machinery, plant, buildings, furniture, live stock, &c.; £1898 1s. for redemption of mine development; and £499 6s. 6d. reduction of preliminary charges and lease. Your directors would draw attention to the annexed statement of working expenditure and capital expenditure to date, and revenue and expenditure statement from the formation of the company, which gives all details of interest to shareholders. The average cost of working for the period under review has been as follows: Mining, 12s. 5·191d. per ton; hauling and pumping, 2s. 2·506d. per ton; transport, 4d. per ton; milling, 3s. 5·094d. per ton; maintenance 1s. 8·047d. per ton; mine development redemption, 2s. 4d. per ton; total, 22s. 4·838d. per ton. To this must be added—office and general expenditure, 2s. 8·303d. per ton; depreciation, 1s. 10·090d. per ton; making a total on all accounts of 26s. 11·231d. per ton. The increase in the cost of working of 5s. 0·968d. per ton for this period is, as shareholders will have gathered from the monthly circulars issued to them, mainly attributable to the scarcity of native labour, resulting from the small-pox epidemic, illicit liquor traffic, and other causes, the general manager having been unable to keep the battery fully supplied with ore. The general manager's report gives all particulars of the work done, both on capital account and in working since last meeting of shareholders. There is annexed the consulting engineers' certificate, showing the development of the mine that has taken place,

and the reserves of ore available, as well as assay values. The compressor for the 20 rock drill plant, which it is proposed to erect, is expected about the end of January. The boilers providing the necessary power for this plant have arrived, and the question of erection of plant is before the board. Cyanide works have been erected, and are now approaching completion, capable of treating the mill output monthly. It is hoped that this plant will be ready for use by the beginning of March next. The certificate of the consulting engineers shows the state of the machinery to be satisfactory, and points to the alterations that may have to be effected in view of future working arrangements.

Mount Zeehan (Tasmania) Silver-lead Mines.

The directors, in their annual report, say that the new concentrating machinery being in course of erection during the first six months under review, very little mining or underground work was carried on in the meantime. The concentrator commenced running early in January, 1893, but it was soon apparent that some modification and rearrangement would be necessary to adapt it to the thorough and economical treatment of the company's ores. Some of the most obvious alterations and adjustments have been carried out, but although the manager now states that the plant is doing the best work of any on the field, the directors cannot yet express themselves as entirely satisfied with the results obtained. As soon as the concentrator was ready for work active stoping was commenced in the mine, and from that time up to the end of the year 7106 tons of ore were raised, producing after concentration about 1111 tons of marketable ore, which contained about 814 tons of lead, 87,500 ounces of silver, and realised net about £13,600.

San Salvador Spanish Iron Ore Company.

The directors report for 1893 that the net profit on the year's trading amounted to £852, which, added to the sum of £168 brought forward from 1892, leaves at the credit of profit and loss account a balance of £1020. The past twelve months was a period of unprecedented depression, not only in the iron and coal trades, but in all departments of general business. The price of Spanish ore was so low as to preclude the profitable working of many similar properties, but, in spite of so much depression, the company had maintained its position and largely increased its sales. A dividend of two per cent. upon the preference capital, carrying forward the balance to current year, is recommended. If the output of ore is to be brought up to 100,000 tons per annum, additional capital outlay is necessary, and it would conduce immensely to more economical and profitable working if the remaining 3938 unallotted preference shares were subscribed for. During 1893, £1375 additional capital was subscribed, the whole of which, together with a further £300, was expended in new works. The shipments of ore amounted to 37,363 tons, an increase of 18,422 tons, and were mostly consigned to English ports.

West Kitty Mine Company.

The following circular has been addressed to the shareholders:—"I am requested by the committee to inform you that in the present state of the tin market it has been decided to limit the output to the requirements of cost, as there is every reason to believe that it is unwise to sell more tin than is absolutely necessary at such unremunerative prices as are now ruling."

Langlaagte Estate and Gold Mining Company.

The dividend of 20 per cent. for the half year ended 31st December last is now payable. Cheques for the same have been posted to registered shareholders, and holders of bearer warrants are requested to lodge dividend coupon No. 1 with the Standard Bank of South Africa (Limited), 10, Clement's-lane, London, E.C., by whom the same will be paid, if in order, four days after lodgment.

— The directors of the TOLIMA MINING COMPANY (LIMITED) will pay, on the 21st day of March inst., a dividend of 10s. per A and B share to the shareholders as they stand on the register on the 13th inst., being a first dividend of 10 per cent. for the year 1893.

— The London agents of the MAY DEEP LEVEL GOLD MINING COMPANY (LIMITED) are advised that a loan of £30,000 has been negotiated for one year, renewable at the company's option for a further period of six months. The rate of interest payable is 10 per cent., and the parties who have arranged the loan will receive a bonus of 4500 of the company's reserve shares, leaving a balance of 19,500 reserve shares at the disposal of the company. Power to deal with the reserve shares was granted at an extraordinary meeting of the shareholders held at Johannesburg on January 29. The repairs to the boilers have been completed, and the mill is again at work.

— The interest coupons due 1st March, 1894, on the "C" debentures of the DON PEDRO, will be paid on presentation to the Metropolitan Bank of England and Wales, 60, Gracechurch-street, E.C.

— The s.s. *Hollinside* sailed from Santander on Tuesday with a cargo of the SAN SALVADOR SPANISH IRON ORE COMPANY'S ore for Middlesbro'.

— Warrants for the sixth dividend (making 7s. per share in all), declared by the ALADDIN'S LAMP GOLD MINING COMPANY (LIMITED), have been posted.

TIN TICKETING.

A TICKETING for tin ores was held at Redruth, on Tuesday, with the following result:—

VALUES OF ORES SOLD BY EACH MINE.

	Tons cwts.	Per ton.	Value.
Carn Brea No. 1	18 0	£37 7 6	£672 15 0
do No. 1a	18 0	37 7 6	672 15 0
do No. 1b	18 0	37 7 6	672 15 0
do No. 2	2 0	29 12 6	59 5 0
Dolcoath No. 1	17 0	41 5 0	701 5 0
do No. 1a	17 0	41 10 0	705 10 0
do No. 1b	16 0	41 12 6	666 0 0
Wheal Grenville No. 1a	20 0	42 12 6	852 10 0
do No. 1b	15 0	41 15 0	626 5 0
do No. 2	5 10	28 12 6	157 8 9
Tincroft	16 0	36 12 6	586 0 0
do	15 0	36 15 0	551 5 0
do	3 0	35 2 6	105 7 6
South Frances Uid. No. 1	14 0	39 2 6	547 15 0
do No. 1a	13 0	39 7 6	511 17 6
Wheal Basset	20 0	42 5 0	845 0 0
do No. 2	3 0	26 7 6	79 2 6
Phœnix United	20 0	40 7 6	807 10 0
do. No. 2	1 0	30 12 6	30 12 6
East Pool No. 1	17 0	36 12 6	622 12 6
do No. 2	2 0	13 0 0	26 0 0
Killifreth	17 0	41 2 6	699 2 6
West Frances	14 0	40 15 0	570 10 0
West Kitty	12 0	41 12 6	499 10 0
Wheal Agar	9 0	35 15 6	321 15 0
South Condurrow	8 0	42 12 6	341 0 0
Wheal Kitty	6 0	42 7 6	254 5 0
	336 10		£13,185 13 9

AVERAGE PRICE PER TON £39 3s. 8d.

THE EDITOR'S LETTER BOX.

*** We wish it to be understood that we do not hold ourselves responsible for, and do not necessarily endorse, the opinions of correspondents. All communications must be accompanied by the names and addresses of the senders, though these need not necessarily be published.*

GOLD EXTRACTION.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—To all intents and purposes the letter published in *The Mining Journal* last week, and signed by Alexander Cruickshank, in reply to mine of the previous week, might as well not have been written. At best it is but a mixture of evasive bluster and unworthy inuendo. He complains that I conceal my identity under a *nom de plume*. What I suppose the writer of the letter meant to say was *nom de guerre*. The anonymity of the Press is, however, a weapon of candid criticism, which is wielded by others besides myself, when it suits their purpose to do so, as for example, the writer of the article in the *African Review*, or what is tantamount to the same thing, the individual from whom he received his instructions.

Had the writer of that article, which has called forth the present controversy, not attempted to conceal his identity by seemingly committing those who are responsible for the conduct of that journal to share his views and aspirations, I should not have thought it worth while to trouble you with a syllable on the subject. Who that individual is was made pretty clear in your last week's number by another correspondent, signing himself "Lux," who so skilfully pricked the inflated bladder of the Press encomiums on Mr. Hannay's new electro-cyanide process, reducing that medium of advertising it to a very flaccid condition indeed. "Lux," as his signature implies, is evidently in the same position as myself—he wants light on Mr. Hannay's alleged invention.

This Mr. Cruickshank either cannot or will not give. He seems to be very much in the position of a man who has a horse to sell, but refuses to uncover the animal and trot him out, so that the would-be purchaser might judge of his points.

Let me begin by stating frankly that Mr. Cruickshank may at once and for ever disabuse his mind of the belief that I am "the same gentleman who recently penned an article for a scientific journal, and subsequently expressed regret for having done so."

Let me inform Mr. Cruickshank that I have no wish to make the acquaintance of any body of directors whatever, nor do I suppose that any directors desire to cultivate mine, or stand in need of my counsel, whether it be wise or otherwise.

As to the ore which was treated on the occasion of the "demonstration" to the representatives of the Press, I beg to say that his statement now as to its being the well-known "Reedy Creek" ore, and, as the result of that "demonstration," that it yielded 90 per cent. of the precious metal, is strikingly at variance with what was currently believed to be the fact at the time.

Why did Mr. Cruickshank, if he had such a "satisfactory result" to communicate, let the grass, so to speak, grow under his feet, and not send it the day afterwards to the representatives of the Press, who were invited to view the process? It would have materially enhanced the value of their "copy," and, perhaps, saved himself the trouble of replying to awkward questions. May I ask, further, whether the sample of ore treated was part and parcel of the several tons of refractory ores said to have been on the premises, which I am credibly informed were afterwards handed over to the proprietor of those premises as a gift, to be carted away and used for purposes other than to be treated for gold extraction? Mr. Cruickshank talks very tall on the subject of my challenging the validity of Mr. Hannay's patent, and says, "we fortunately possess the written opinions of the most eminent men in London on that point." Mr. Cruickshank likes to indulge in superlatives, I notice, but let me assure him that I, too, have consulted not a few legal and scientific experts on such matters, and am perfectly satisfied with the result of my enquiries.

But, Sir, you will observe that your correspondent purposely evades answering the salient questions contained in my letter. Does he possess signed certificates from Messrs. Johnson, Matthey, of Hatton-garden, and Mr. Claudet, assayer to the Bank of England, giving "the most satisfactory results of the tests of these gentlemen extending over months?" If so, why in the name of wonder does he not produce them? I am convinced they would aid him very materially in disposing of Mr. Hannay's patent rights for South Africa or elsewhere. If he does not possess the desired authoritative information, then I repeat that I protest on public grounds against the misleading tactics which he is pursuing to "boom" a process which, even if he could establish its claim to originality, which I take leave to doubt, is to the minds of those who know anything about it, impracticable at least to this extent—that it never could be worked on a remunerative commercial basis.

If I mistake not, the analysis of the tests made by the latter gentleman, published in the *Investors' Guardian*, and, of course, included in the reprint of the Press cuttings, which "Lux" alluded to last week, refers to a period so far back as three years ago, and to an entirely different ore and conditions of extraction. Moreover, is it not a fact that when Messrs. Parkes-Smith and E. J. Pape submitted a sample of refractory ore to be treated by Mr. Hannay, his process proved an absolute failure after a few minutes trial, and that those who were superintending the operation had to beat a hasty retreat from the building, on account of the noisome fumes which were given off from the materials employed, and that the engineer in charge, in point of fact, became seriously ill in consequence. Let me, in conclusion, set Mr. Cruickshank's mind at rest on the score of my being an advocate of the MacArthur-Forrest process; I am, and what is more, I intend to be, until I can find a better to pin my faith to, and, certainly, that is not Mr. J. B. Hannay's.

Mr. Cruickshank, at the end of his letter, indulges in what, I have no doubt, he thinks a pretty bit of wit, at the expense of my knowledge of gold extraction processes, and says, when I disclose my identity, he will hand me over to some one abler to deal with my "inspired" vagaries than he is himself. I am glad that for once he shows a little modesty in this. I give him my word I shall disclose my identity, when the proper time comes, and that, meantime, I am not afraid to cross swords with the individual he refers to, in point of my resources in that direction.

Let me add a word of advice to Mr. Cruickshank, *ne sutor ultra crepidam*, and when he has mastered its full significance, he will understand that I think that his mission is not company promoting or patent right selling. SCRUTATOR.

GOLD EXTRACTION.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—"Scrutator" and "Lux" are both like the "proverbial cur" who indulges in the howl before it is whipped. When the British public are asked to subscribe to this undertaking it will be time enough for your correspondents to sound a note of alarm. So far, however, we have not done so, nor is it at present our intention to invite public subscriptions. I would not trouble you with this explanation had "Lux" not made a somewhat personal reference to myself in regard to my former connection with Mr. William Elmore in the promotion of a company, floated with the ostensible object of manufacturing white lead by a process patented by Mr. MacIvor. If "Lux" is anxious to know the precise facts of my association with that undertaking and the gentleman named, I shall be pleased to furnish him with details, and vouch for the truth of them, that will make his hair stand on end. Briefly, I was prevailed upon to induce my own personal friends to take shares in "MacIvor's Patents (Limited)," amongst whom were two young ladies, who lost their "little all," as doubtless did many others, but I do not consider that the fact of my allowing myself to be "gulled" is in any degree a justification for misleading others. I have, therefore, in both cases assumed the responsibility as a moral obligation.

"Lux" can have no object in casting unwarrantable reflections upon me, nor can he desire to hold me responsible if Mr. MacIvor lays claim, amongst others, to the titles of "Dr." and "Prof.," when he is neither the one or the other.—I am, Sir, yours obediently, A. CRUICKSHANK.

73, *Basinghall-street, March* 1.

GRAVEL GOLD MINES.

TO THE EDITOR OF "THE MINING JOURNAL."

SIR,—The more closely the position of this company is examined the more inexplicable will the directors' supreme indifference to the shareholders' interests appear.

They have just told us that it has been "conclusively proved" that the mine will pay a "fair profit." Now there may be differences of opinion as to what is "a fair profit," but surely nothing less than 4 per cent. would be so called (I have always understood that a gold mine should pay at least 10 per cent., but let that pass). Now as the present washings only produce about 2 per cent. on the company's capital, it would seem that the directors hope the gold returns will soon be at least doubled, but for the purpose of my argument I will assume that instead of a gross monthly return of £500 (which is now made at a cost of £300) a return of half as much again can be obtained which would, of course, be £750. Now, as no more water will be used in obtaining this larger sum, there is no reason why any greater expense should be incurred than now, consequently the profit per month would be £450, equal to an annual profit of £5400, which, after paying directors' fees and all other expenses in England, would leave something like £5000 to be divided amongst the shareholders. But let us say £4000, so as to be well within the mark.

It will be observed that this result is to be obtained with 800 inches of water, and it will be within the knowledge of everyone who has made himself acquainted with the working of hydraulic mines that all calculations as to the returns from auriferous gravels are based on the well-founded assumption that if a mine will produce, say £500 from 1000 inches of water, 2000 inches will—other things being equal—produce £1000 and 5000 inches will quintuple the first result.

The questions for us, therefore, are—Can an additional 3200 inches of water be brought to the mine? If so, at what expense and with what result?

The prospectus says—and the secretary to the company has assured me—that at least that additional water is available.

As to the cost, the secretary has informed me that the thing can be done for £15,000.

Having then the water and knowing (at least approximately) the expense of bringing it on, the result to be expected is very easily calculated. Thus, if 800 inches brings in £4000 per annum, 4000 inches (according to the directors' own figures), would bring in £20,000, and if we deduct £5000 from this sum for extra expenses we have a clear profit of £15,000 a year, a sum sufficient to pay 10 per cent. on the nominal capital, and to repay within two years the £10,000 which we should have to raise. The 1s. uncalled will produce the other £5000, and make up the £15,000 which is wanted.

If the directors or any shareholders can find a flaw in my figures or argument I shall be glad to be set right, but if I am right it is certain that the shareholders are entitled to be informed how it is that the directors have made no attempt whatever to bring about a result which to all appearance would be as certain as it would be satisfactory.

The directors may, of course, say that they expect to get with the present water supply sufficient to pay a much better dividend than 4 per cent., but, if so, that fact would only make my argument the stronger, and their engineers the more extraordinary, since whatever dividend they may be able to pay with the present water supply would be quintupled with 4000 inches, so that a dividend of 6 per cent. from the smaller supply would be raised to 30 per cent. with the larger, a large dividend, I admit, but not more than a fifth part of that which these gentlemen promised us when they asked us to take up shares in the original company. Can it be that the directors' "masterly inactivity" is caused by some difficulty in regard to this extra water supply, a difficulty so serious that they cannot overcome it, and are ashamed to tell the shareholders the truth?

I think so, and the more especially because I am just reminded that a ditch for bringing on this alleged extra water supply was begun, and proceeded with for some months, and then, after a lot of money had been expended on it, suddenly abandoned.

Whatever the facts may be, the directors have no right to treat the shareholders as if they were a lot of children, from whom whatever is unpleasant is to be studiously concealed. Speaking for myself, and as the holder of 600 shares, I ask for full information, and I trust that my fellow shareholders will join me in demanding this. P.

GEOLOGICAL COINCIDENCES IN VICTORIA.

TO THE EDITOR OF "THE MINING JOURNAL."

DEAR SIR,—In your issues of the 13th and 20th January, I note an anonymous attack upon Mr. E. T. Dunn, of the Victorian Geological Survey. An attack of this kind is a poor thing at the best, and in this case Mr. Dunn cannot, owing to the distance, reply until a long interval has elapsed. May I, therefore, ask your readers to be careful of receiving the views of a writer who has not the manliness to sign his name; and may I remind them, also, of a fact, of which many of them are already cognisant, that Mr. E. T. Dunn is the father of South African geology, one of the very first of Australian geologists, and a man of irreproachable reputation. Charges of plagiarism are easier to make than to refute. I never read the articles of Mr. Nicholas to which reference is made; but I have no doubt that your anonymous correspondent would discover some coincidences if he had read my description of the Bendigo gold field, which is contained in the Transactions of the American Institute of Mining Engineers. That two investigators should arrive at similar conclusions regarding the geological structure of a region is a matter for satisfaction rather than invidious comparison.—Yours faithfully,

T. A. RICHARD, A.R.S.M., F.G.S., &c.

Denver, February 10th, 1894.

THE MINERAL WEALTH OF HUELVA.

Being an Illustrated Article on the History of this District from the earliest times.

[Specially written for *The Mining Journal*.]

IV.

(Continued from page 198).

THE continuity of these death struggles could have only one effect on a trading people like the Phœnicians, namely, the ruination of their commerce; and Isaiah, a contemporary of most of these events, clearly foresaw this result, and set it forth most beautifully in the 23rd chapter of his prophecies.

The great power of the Phœnicians lay in their colonies, but how could they be attended to with all these distractions at home? Of course this could not be, and we find, as already mentioned, that the Carthaginians, true to their ancestral instincts, are beginning in 650 B.C. to deprive these very ancestors of their hold of Spain.

Herodotus tells us that a Samian vessel, the master of which was called Colœus, being continuously driven by an east wind, passed outside the Pillars of Hercules, and arriving at Tartessus, a town at the mouth of the Guadalquivir, found that port to be unfrequented. This voyage has been fixed as taking place in 639 B.C., and there can be no doubt that from about this period, all the colonial power of Tyre or Phœnicia gradually declined, and the town "whose merchants were princes, and whose traffickers were the honourable of the earth," dwindled down to be one of local importance only.

Had the Phœnicians continued to occupy Tartessian Spain after this period, they who so soon became masters in the art of coinage would assuredly have introduced their money there. Its absence, therefore, in the mines of Huelva, can only be accounted for by the decampment of that people from the district before the use of coined money became common, which, as already shown, was after 700 B.C.

From these considerations we may assume that the Phœnician dominion in the south-west of Spain ended about the year 650 B.C., and as we have shown that it probably commenced somewhere about 1200 B.C., its duration extended in all likelihood over five and a half centuries. Were the mines of the Huelva district worked through all these years?

This is difficult to answer, but if they were worked regularly, the rate of working must have been slow, otherwise the amount of resulting slags would have been larger than that which still existed when the mines were restarted in modern times. The broken-up appearance of the slags forming the heaps left by the Phœnicians indicates a re-smelting of these in the times of the Romans, so that a certain loss of bulk would have taken place. Again, it is quite possible that their operations may have been carried on spasmodically only, as the demands of the home market had to be met.

Where is Tarshish of the Bible?

Hitherto we have endeavoured to keep strictly within the bounds of demonstrable history; but an enquiry, very nearly related to the foregoing, is of such collateral interest that some mention of it here is not only not out of place, but extremely pertinent, notwithstanding the endless controversy which has always been induced by its consideration. This enquiry refers to the location of the Tarshish of the Bible. It is not our intention to maintain that it was or was not in any particular spot or district; but it will be necessary to recall the arguments chiefly used for the various locations, as some of them may be affected by an acquaintance with the district of Huelva, and its ancient mining history certainly does influence this enquiry.

Tarshish has been variously placed in Spain, elsewhere on the Mediterranean, in Arabia, in India, and in Africa. Only a single incident in the whole of the Bible points to it as being outside the Mediterranean, or rather as not being in one or other of those countries which at that epoch would have been reached by the navigation of the Mediterranean Sea. This incident is the commercial partnership supposed to have been entered into between Ahaziah and Jehoshaphat. It is twice referred to, first in 1 Kings 22, 48-49, and second in 2 Chronicles 20, 35, 36, and 37.

The former passage says:—"Jehoshaphat made ships of Tarshish to go to Ophir for gold, but they went not, for the ships were broken at Ezion-Geber." (This is a port on the Red Sea, added by Solomon to his kingdom, and hence it has been argued that if Tarshish were on the Mediterranean, its ships could not have reached this port in those days.) Then said Ahaziah, the son of Ahab, unto Jehoshaphat, "Let my servants go with thy people in the ships." But Jehoshaphat would not. And the latter one says:—"And after this did Jehoshaphat, King of Judah, join himself with Ahaziah, King of Israel, who did very wickedly; and he joined himself with him to make ships to go to Tarshish, and they made the ships at Ezion-Geber. Then Eliezer, the son of Dodavah, prophesied against Jehoshaphat, saying "Because thou hast joined thyself with Ahaziah, the Lord hath broken thy works. And the ships were broken, and they were not able to go to Tarshish."

Between these two versions there is such an important discrepency as the very existence or not of the partnership; the reading of one may be rendered to mean ships similar to those used for going to Tarshish; and according to both the expedition never came off at all, so its destination, different in each case, must be accepted with reserve.

(To be continued.)

SERIOUS LABOUR DISPUTES.—It is stated that notices have been given to the steel and tinplate workers at the Pontymister Works to terminate contracts to-day (Saturday). The dispute has arisen through North British workmen having refused to continue the work of rolling steel bars, and upwards of one thousand workers are affected.—The dispute between Messrs. Harland and Wolff, shipbuilders, Belfast, and the platers' helpers, is reported as becoming more serious. On Tuesday a large number of additional hands ceased work, throwing a corresponding number out of employment. The prospects of a general cessation of work are increasing, and this will result in considerable delay in launching two Hamburg-American liners, and the Union steamship *Norman*, at present approaching completion.

RAILWAY AND COMMERCIAL GAZETTEER.—Messrs. MacCorquodale and Co. have just issued the twelfth edition of their Railway and Commercial Gazetteer (Simpkin, Marshall, Hamilton, Kent, and Co.), in which full particulars are given of all the towns in England, including the smallest hamlet, their distances from London, their post offices, and population. The extent of the work involved in the publication of the volume becomes apparent when it is known that there are over 40,000 places mentioned, that being the number of the cities, towns, villages, parishes and townships in Great Britain. The value of the work to those who are in need of information as to the locality and size of some of the obscure corners of the kingdom could hardly be over-estimated.

MINING NOTES.

HOME, COLONIAL, AND FOREIGN.

A PRACTICAL miner and mine manager, who some months ago left for South Africa, in a letter addressed to a Sydney gentleman, delivers his opinion of the Johannesburg gold field. He says:—"I arrived at Cape Town after 24 days steaming from Sydney, and a rough passage. The first thing I found was an exceeding difficulty in learning anything in reference to mining matters; and so, determined to try my luck elsewhere, I went to Delagoa Bay, a Portuguese settlement on the east coast, six days sail from Cape Town, and found things just as quiet there; in fact, the people do not know they are alive. Next I went to the Barberton gold fields, and they, too, were as quiet as any of the old diggings I ever saw in Australia. After taking a good look round, by a circuitous route, I reached Johannesburg, where I am now located. This is a most expensive country to live in; the coach charges are 1s. per mile. Johannesburg is a large place for its age. It has a population of about 40,000 whites. Everything in the way of necessaries is very dear; any sort of a shop will bring about £40 to £50 per month, and small at that. Most of the business people are Jews. There are more people out of work in Johannesburg than ever I saw in Sydney, and before long there must be a general reduction of wages. Many Australians have found their way here, and, for what reason I cannot learn, the South Africans have a terrible down on them. I certainly would not advise anyone to come here. As soon as the war is over I shall make my way to Matabeleland, where they say gold is to be found. I cannot hear of any alluvial in this country anywhere. As to the mines, there is a run of country being worked some 40 miles long. Coal mines are at each end, so that fuel is easily obtained. Very little timber is to be seen, and that used for mining purposes is nothing but saplings. The largest timber used is pine, and there is not much of that. All the mines are worked with Kaffir labour, and the wages are about £1 per week. A white man superintends some 35 Kaffirs. The Kaffirs can work as well as a white man, and I imagine if similar labour was introduced into Australia many reefs would pay to mine which are now lying idle. The reefs here are not worth more than 8 dwts. or 9 dwts. The 'banket,' as it is called here, reminds me very much of cemented wash—in fact, it is nothing else. There is a large amount of machinery here. The batteries in almost every instance are large, varying from 40 head to 200 head of stamps, so that Johannesburg ought to turn out a large quantity of gold. No concentrating is done here; the cyanide treats the tailings, and the battery work, consequently, is not as careful as it is in Australia. Another feature of the mines here is the extensive use of rock drills. In some there are quite 30 in operation; one white man with two negroes having charge of each machine. These men work 10 hours per day, and earn £1 per week, and there is plenty of demand for such work. As the result of my experience on this field, I certainly should not advise miners from Australia to come here.

THE Inspector of Mines has received a packet of 1¼ ounce of beautiful wire or filigree gold from Wilgena, says the *Adelaide Observer*. The sender writes saying that the gold was found about thirty miles from the head station, towards the south-south-east. All of it was found within a foot of the surface on the top of decomposed granite. Colours were obtainable in nearly every dish tried in the gully where most of the work had been done. In an adjoining gully colours were also found, though no fair patch of gold had been met with. The two heaviest pieces of gold picked up weighed 1 dwt. and ¼ dwt., which the writer had in hand. Similar gold had been found about fifteen miles to the north-west of the station, where only one gully had been tried, and that only for one day. He believed colours were found in every dish. There was no water near the place. In one gully there was a reef running to the south-south-east, and prospectors showed small specks of gold which they said they had obtained by dollying. The men who had been prospecting had knocked off work because they could not make it pay.

THE amount of Victorian gold passed through the Melbourne Mint during 1893 totalled 695,934 ounces, the actual output from the mines for the year being about 666,500 ounces, valued at, say, £2,666,000. This is the largest output since 1885, and is 12,000 ounces more than that of 1892. Bendigo mines contributed approximately 215,000 ounces towards this amount, and Ballarat district (which includes Creswick, Egerton, Steiglitz, &c.) about the same. The Star of the East Mine heads the list for the year with a total output of 25,222 ounces, from 51,784 tons of stone crushed. Johnson's Reef comes next, with 23,214 ounces from 33,475 tons. Then the following in order named:—Berry Consols (alluvial), 19,890 ounces; Long Tunnel, 19,291 ounces, from 17,884 tons; Madame Berry (alluvial), 16,854 ounces; and Princess Dagmar, 16,265 ounces, from 11,500 tons. From the three mines working the Dagmar Reef (Johnson's, Dagmar, and Golden Age) upwards of 43,000 ounces of gold was obtained, and £106,911 paid in dividends. The amount of gold purchased by the various banks in Bendigo (says the *Independent*), from 1851 to 1893, is 11,506,531 ounces, valued at £46,026,124.

THE *North Queensland Register* enumerates the following as the most productive mines of 1893:—

	Tons.	Ounces.
Mills' United	46,079	51,889
Victory	13,826	37,584
Brilliant	25,256	25,788
Victoria	6,923	15,690
Brilliant and St. George United	10,239	11,600
New Queen	6,183	11,075
Mosman	7,740	8,861
Day Dawn P.C.	6,462	8,834
Craven's Caledonia	3,232	7,894
Brilliant Block	7,898	7,863
Kelly's Queen Block	3,024	6,966
D. Day Block and Wyndham	4,850	4,406
Mount Leyshon	15,890	4,047
Identity	3,488	3,173
Papuan	962	2,715
Brilliant Central	1,878	2,709
Stockholm	2,126	2,392
Queen Central	2,337	2,276
Queen Cross Reef	1,099	1,928
Band of Hope	1,060	1,728

The Australian Gold Recovery Company (Limited) and the Charters Towers Pyrites Company (Limited) won 4764 and 3205 ounces respectively, or a total of 7970 ounces, a very respectable addition to the total gold production of the field.

ONE of the most interesting features of the past year's work has been the pushing down of the shaft at Lansell's 180 mine, which is now over 3000 feet deep, the deepest shaft in Australia, and probably, for gold mining purposes, in the world. The deepest shaft in Ballarat is at the South Star Mine, which has recently attained a depth of 2000 feet. The gold yield for Queensland for the year was 600,327 ounces, a decrease of 15,231 ounces on the previous year, probably to be accounted for by the disastrous floods which took place in the early part of the year. The output from Charters Towers was 256,352 ounces, the largest yield from any field in Australia. The total yield from Australia for 1893 amounts to about 1,900,000 ounces.

DRIFT mining has never made much progress in Shasta county, says the *Mining and Scientific Press*, but it is known that the county contains several ancient river beds which would pay well for development. One or two enterprises are already on foot. George Martin, O. E. Nash and County Treasurer Jackson, are driving a tunnel into a hill near Redding, on the east side of the Sacramento, with confidence that they will find an old channel. The tunnel is now very nearly through rim rock. The late Erastus Parsons, before his death, proved the existence of a pre-historic gravel deposit under the sandstone capping on Oregon gulch by sinking an 80 feet shaft through the sandstone and into gravel that carries gold. Everything indicates that this is an old river channel, and that the gravel carries gold is a settled fact.

THE half-yearly meeting of the Johannesburg Pioneer Company was held on 2nd February. The report showed a net profit for the six months of £2560. The Chairman regretted the report was not so satisfactory as the last, but they had been handicapped by the hardness of the rock, insufficient appliances for working it, scarcity of labour, &c. The directors proposed an expenditure of £6000 for the purpose of better equipping the mine. A long and animated discussion took place prior to the adoption of the report, and eventually the meeting adjourned.

No milling or mining operations had been carried on during the half-year under review—so ran the report presented at the meeting of shareholders of the Evelyn Gold Mining Company on the 30th January, but the tailings treated up to November, 1893, had realised £460. The report further dealt with the disposal of £1960 recovered from the Roodepoort United Main Reef—£1810 having been credited to machinery and plant account, and the balance to mine development. No information could be given as to the future operations of the company, the new directors not having had time to consider the matter. The report and accounts were unanimously adopted.

THE amount paid in dividends by the dividend mines of Victoria during the year 1893 was £578,678, an increase of about £3000 on the previous year. Bendigo mines (about 30) distributed £247,008, and mines in other parts of the colony £331,670. Johnson's Reef Company heads the list with a total of £53,200, Princess Dagmar coming next with £48,366; then the following in order named:—Star of the East, £38,400; Berry Consols, £34,000; Madame Berry, £30,600; Long Tunnel, £28,800; New Red, White, and Blue, £22,500; South German, £21,600; Black Horse United, £20,500; and New Mariners, £20,250. The last named company has disbursed this amount in six months, having paid its first dividend on July 5. The following companies have also paid well during the latter part of the year, viz:—United Albions, £8750 since June 27; Prentice Freehold, £6000 since August 14; Golden Age, £5345; South Devonshire, £10,200 since July 27; and last, but by no means least, Clarence United, £10,500 since October 19.

JOINT-STOCK COMPANIES.

NEW REGISTRATIONS.

THE following are among the joint-stock companies registered at Somerset House since our last notice:—

South Wales Primrose Coal Company (Limited).—Registered by Tamplin, Taylor, and Joseph, 165, Fenchurch Street, E.C., with a capital of £70,000 in £10 shares. Object, to purchase or otherwise acquire certain mineral estates and collieries known as the Primrose Collieries, together with the veins of coal and other minerals situate in Glamorganshire, and to carry on business as colliery proprietors in all or any of its branches. There shall not be less than three nor more than seven directors. The first are:—E. H. Hedley, Rev. J. C. Thomas, Rev. J. P. Lewis, R. Thornley, H. M. Hedley, and D. Smith. Qualification, 200 shares. Remuneration: E. H. Hedley, £650 per annum; ordinary directors' remuneration to be fixed by the company in general meeting.

African Consolidated Land and Trading Company (Limited).—Registered 19th February, by Burgoyne, Watts, and Co., 77, Gresham Street, E.C., with a capital of £200,000, in £1 shares. Objects: To purchase, lease, or otherwise acquire lands, estates, mines, mineral grants, gravel deposits, mining rights and privileges, ores, minerals, and other properties; to search for, prospect, examine, and explore mines and ground supposed to contain minerals and precious stones, and to work, explore, develop and maintain the lands, estates, mines, minerals, and other properties that may at any time be acquired by the company. There shall not be more than seven nor less than three directors. The first are to be appointed by the signatories to the Memorandum of Association. Qualification, £200. Remuneration, £300 per annum, and a commission divisible.

Commercial Lead Company (Limited).—Registered February 19 by Dixon, Watts, and Elkin, Savoy Mansions, The Savoy, W.C., with a capital of £100,000, in £10 shares. Objects: To carry on the business of smelters, manufacturers of and dealers in lead, and desilverisers, and any other businesses which may advantageously be carried on. There shall not be less than three nor more than seven directors. The first are to be appointed by the signatories to the Memorandum of Association. Qualification, 100 shares. Remuneration, £700 per annum, and £105 for every 1 per cent. in the dividend over 10 per cent., to be paid as follows:—£100 per annum, and the rest *pro rata*, according to attendances.

THE PETROLEUM TRADE IN THE CAUCASUS.—Our Vienna Correspondent writes:—"According to official advices from Batoum, the state of the petroleum market there, had not improved last month. The promised reductions in freight on the line between Baku and Batoum had not taken place. The introduction of a differential tariff had been suggested, by means of which the freight should vary from month to month, in accordance with the rise and fall of prices in the markets of the world, in such a manner that Russian petroleum could compete everywhere with that of America. Representatives of the petroleum industry had left for St. Petersburg to take part in a conference on the subject. The price of petroleum at Baku had fallen to 3½ kopeks per pood, that of naphtha being 2¼ kopeks per pood. Nearly 142 quintals of naphtha products were exported from Batoum during the month of January. Little over a third of this quantity was sent to France, the East, and Russia itself taking between them nearly a quarter of the whole. The next largest purchasers were Austria, Hungary, England, Turkey, and Egypt. The Vladikavkas Railway Company had been empowered to build petroleum reservoirs at Grosnyj, and to lay down pipes to certain naphtha wells some 12 kilometres distant from that place. The unfavourable position of the naphtha trade had also affected other branches of commerce in those districts.—*The Times*.

[*Received too late for classification*]

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Apply by letter, stating age and salary required, (all found) to "J. 562," at Shelley's Advertising Offices, 38, Gracechurch Street, E.C.

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JACOB H. NEFF, President California Miners' Association.
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The buyer pays no fees whatever, and there is no incentive to dvance the price beyond the original figures at which the price and ommission have been agreed upon with the seller.
It is not intended only to negotiate the sale of an entire property but interests in such may be sold or money obtained for development work.
This Company especially solicits the business of making reports or examinations for non-resident mine owners on any of their mines in the United States, and obtaining special information as to their condition and so forth (said reports being confidential).
Those who conduct the business of the Company have had long experience in mining operations, and it is their intention to place the Company in a position to inspire the confidence of all who seek its assistance in its integrity and fair dealing.
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Descriptions of properties for sale with maps, reports and all necessary information, are left on file in the office of the Company. Abstracts of such reports with prices of mines will be furnished pon application.
California has produced £267,000,000 in gold, and is still producing £2,680,000 a year. There are thousands of claims requiring capital for development. In other Pacific Coast States and Territories there are abundant opportunities for investment in mines of gold, silver, copper, lead, coal, and so forth. Information concerning these will be furnished by this Company on application.
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LONDON: MARCH 3, 1894.

THE DEVELOPMENT OF THE RANDT.

THE gold production in South Africa has made so much progress since its beginning in 1886, that the question is now being asked whether it will not rival in importance that attained in the early days of California and Australia. The decision of this question will be an important matter for the world's prosperity, no less than for the very large body of interests which are associated with modern metalliferous mining. An addition to the world's stock of bullion at the rate of £13,000,000 or £15,000,000 annually, which was the extent to which, in their flourishing days, the two gold fields mentioned contributed to the world's wealth, would exercise an enormous influence in relieving commerce and industry generally from the depression under which they at present labour. Moreover, South African mining development has a special interest of its own, inasmuch as it is proceeding upon new and peculiar lines, the success of which must increase the possibilities of profitable gold production elsewhere. There can be no doubt that South Africa will, eventually, play as important a part in the world's commercial position as that played by the great gold booms in the earlier part of the century, and this, after allowing for the fact that an output of 13 or 15 millions would bear a much less imposing proportion to the total of the world's monetary transactions nowadays. The present production of the Witwatersrandt field is at the rate of about half the former figure annually, but as record output succeeds record output, this is likely to be greatly exceeded before long. Already, the Witwatersrandt is the largest producer of gold in the world, although the results obtained there in the treatment of conglomerates are opening up new mines in different parts of the globe, and further developments both in British Guiana and Western Australia are prophesied. Last year the world's output of gold was £29,000,000, or £6,000,000 more than the total of the years immediately preceding the active exploitation of the Randt. The expert whom the Prussian Government has sent out to the Randt agrees with Mr. HAMILTON-SMITH and other experts in attributing to that huge basin of auriferous quartz a total value of at least £350,000,000, and also in putting the period within which this treasure will be extracted at about 40 years. This would give an average output of nine millions sterling, or considerably less than the amount required to effect any real revolution in the economic aspect of the world. These estimates must, however, be considerably modified in determining the probable future of the Randt. They are based upon present results, and present results are a very imperfect measure of what will ultimately be obtained. So far as the total output is concerned, it is likely to be largely swelled above the figure quoted by continual increase in the percentage of gold recovered from the ore and from the tailings. One may make the present minimum for profitable working at 6 dwts. to the ton, but a mere reduction in the cost of dynamite would enable many companies to mine and work stores of low grade stuff, which is at present valueless. Looking forward to the reduction of working expenses, it is almost impossible to put a limit upon the potential wealth of the Randt, for low-grade ore seems to be present in practically inexhaustible quantities. On the other hand, it is very improbable that it will take the Randt 40 years to produce gold to the value of £350,000,000. The enormous extensions which are being made to plant, and especially the commencement of deep level mining upon a systematic principle, must in the course of the next three or four years bring the Randt output above the £9,000,000, which is the average on the 40 years' theory. Either the gold value of the Witwatersrandt is much greater than the figure estimated, or it will be exhausted within the period mentioned.

The enormous and unprecedented demand for new plant from the Transvaal gold field may be judged from the fact that last year South Africa imported machinery from this country alone to the value of £200,000 more than in 1892. In face of these remarkable indications of future development, the present position of South African gold shares on the London market is certainly anomalous. There is a quietude in the demand for stock very much out of character with the rapidly mounting statistics of the industry itself. Investors are very slow in returning to the "Kaffir" market, and even those who buy only to realise an immediate profit are apparently without much confidence in the future. This feeling is the result less of ignorance of the advances made on the technical side of South African mining than of mistrust concerning its direction. In the past development of the Witwatersrandt there have naturally been many instances of companies starting with capital inadequate to the proper working of their properties, and there has been a consequent plethora of reconstructions and heavy borrowings. In too many cases such transactions have not been honestly conducted, and the shareholders have been made cats' paws for little groups of Johannesburg financiers. Suspicion always lasts after the disappearance of the causes which have engendered it, and the investing public still seem dubious about the general policy of mine directors on the Randt. However, it must be remembered that the gold industry has now passed the stage in which these reconstructions were a factor, and the necessity of fair dealing has been pretty sternly emphasised by long continued "slewp" in the value of shares. Timid speculators should be able to extract a great deal of encouragement from the proceedings at the annual meeting of the Witwatersrandt Chamber of Mines. The figures thereat submitted in respect to the operations of the mining companies in 1893 not only show extraordinary advance in technical methods, but a distinct improvement in the financial standing of the industry. Thus, last year the companies on the Randt paid dividends amounting to £1,097,000, which is over £300,000 more than was paid in 1892, and is one-fifth of the total value of the output in 1893. Moreover, the increase in dividends, as compared with 1892, was 39·2 per cent., while the increase in the output was only 22·4 per cent. There is here testimony to more efficient management and fewer disastrous "deals" for shareholders that cannot by any possibility be explained away. Such figures certainly ought to induce a buying movement in South African shares. Of course, it is perfectly true that reconstructions and various financial juggles have operated to materially depreciate the real value of these dividends as a return upon capital, and also that only comparatively a few companies have entered the dividend paying list. Thus, over £1,000,000 out of the dividends paid was contributed by 14 companies out of 16 paying dividends. There can be no doubt, however, that Randt gold mining is undergoing a thorough process of reform, that it is becoming much easier to earn dividends, and that the possibilities of even the most discredited mines cannot, in face of the wonderful reduction in working expenses, be safely ignored.

Some of the facts presented by the Chamber of Mines strikingly illustrate the progressive tendency of gold mining as practised on the Witwatersrandt, and, while they are encouraging, speculators in South African shares are also full of hope

for the future of gold mining elsewhere. Thus, 68·5 per cent. of the increase in last year's output was due to improved treatment of the tailings, as against only 31·5 per cent. due to increased crushing by the stamp batteries. This is a splendid result, and the future of the cyanide and chlorination processes is still so open to conjecture that one cannot say to what extent it may be surpassed in later working. It is also apparent, from the figures quoted at the Johannesburg meeting, that many companies have been occupied during 1893 in erecting new crushing and other plant, which, while it has hindered output in the past, will lead to an enormous future development. Of the use of electricity, of amalgamating companies, and the extension of railway facilities as investments in the cheaper working of mines, we need not speak here. The Chamber of Mines is bestirring itself to deal with the larger questions, which affect all the mines in common, and are not to be settled by directorial enterprise. In the first place, they have secured a valuable boon for the mining industry by what is known as the dynamite compact, which promises to defeat the ill-advised attempt of the Transvaal Government to impose a crushing monopoly upon the backbone resource of the State. It is clear that whether or not a Government factory for the explosive is ultimately established, it will not be forced up to the starvation prices which have crippled blasting operations in the past. The Chamber hopes to deal also with the oppressive labour difficulty which has been one of the chief obstacles to the remunerative development of the industry. For some time back it has been endeavouring to formulate a scheme that would ensure a plentiful supply of "boys," and reduce their wages to a fair level. The latest cablegrams are to the effect that arrangements have now been completed for importing natives from the East Coast. Then, again, it seems as if the continued complaints of the mining community had at length culminated in the determination of the Government to take over the Netherlands Railway Company. Before long, the mines will have two sources of supply available for mining material, machinery, and the like by the construction of the Delagoa Bay and Natal lines. In face of all these tendencies towards placing the mining industry upon a solid basis of prosperity, there can hardly fail to be experienced before long a smart recovery in the "Kaffir" market.

THE BROKEN HILL PROPRIETARY COMPANY.

THE half-yearly report of this company, which has reached us by mail this week, will no doubt be considered satisfactory. The fortunes of this company have been as variable as they have been distinct and opposite in character. Notwithstanding its wonderful richness, and its almost isolated position in this respect, it has not been able to screen itself from the storms and stress of fortune, to such an extent even that admiration and envy gave way to contempt and pity. Now, however, it seems to be gradually overcoming the evils that overtook it; confidence is once more being restored; and aloofness is now giving way to interest and hope. The directors report encouraging results from the arrangements entered into with the British Broken Hill Proprietary Company, for the lease of the latter's furnaces. Not only has there been an appreciable increase in the weekly output of silver and lead, but that increase has been obtained at a relatively smaller cost. This is something deserving congratulation. Then, again, the satisfactory results which the directors consider have been obtained from the refinery have impressed upon them the policy of doubling the existing capacity of the plant, which is to be done at a very slight extra expenditure. In connection with this matter, they also have under consideration the question of the erection of a plant for the purpose of further treating the lead from the refinery. No exception, from a shareholder's point of view, can be taken to this, for it is a move in the right direction. One of the most important items of machinery on a mining property is, of course, the concentrating plant, and upon the successful working of this a vast deal depends. The directors—presumably acting under able instructions—quite see the force of this, and they have accordingly made arrangements for the removal of the concentrating plant from its old position, where it was becoming somewhat affected by the subsidence of the ground immediately beneath it. They say:—"This plant is one of the most important branches of the metallurgical department, and although in the past the results obtained have not been altogether satisfactory, nevertheless the plant as it exists has been of very material assistance in treating certain classes of ore, which it was impossible to reduce by any other process." In addition to this the directors see the necessity of renewing a large portion of the machinery, as old age and use are exhibiting their depreciating effects. The manager intends, wisely, to take advantage of this in introducing machinery of later and more modern construction, so that when this is erected we may, with greater certainty, look forward to improved results. The old mill is now being pulled down, and the re-erection of the plant upon a new and more convenient site is being pushed forward with all possible speed. Then we learn that the chloridising plant, consisting of ten furnaces, has so far approached completion as regards six of them, as to enable these to be put in blast for a preliminary trial. The report adds:—"It has, however, been found necessary to effect certain changes as to the mechanical arrangements for the handling of the ore, which alterations are now in course of being made, and as soon as these have been satisfactorily arranged and proved by results, the completion of the balance of the furnaces can be easily and expeditiously carried out, the whole of the machinery being on the ground, and the foundations already laid." Another encouraging and promising fact—which, no doubt, shareholders will read with pleasure—is the announcement that during the past half-year several discoveries of an important nature have been made, chiefly in regard to carbonate of lead ore, of which a valuable and independent body has been opened up parallel to the main lode, and in the vicinity of Darling shaft, thus adding, as the directors point out, considerably to the reserves of this class of ore. Added to this is the further encouraging circumstance that the finances of the company are in an "eminently satisfactory condition." During the past year the directors have, apart from other excellent work, effected substantial reductions in the cost. Had it not been for this, of course, the fall in the price of silver would have had an effect upon the mine not too easily imagined. These economies, however, have minimised this ill-fortune, and have enabled the company to keep in a healthy condition. The net profit for the six months amounted to £453,632 17s. 3d., out of which sum £288,000 has been distributed in dividends, and £30,000 added to the reserve fund, which increases the latter to £110,000. Taking the report of the directors as a whole, we have every reason to be satisfied with it. Misfortune has overtaken this company, as it has every silver mining concern, but the board have shown themselves able to battle against it, and in quite a commendable manner. The circumstances which have seemed to combine in a remarkable degree to permanently injure this property have been admirably tackled and minimised. Indeed, the company seems almost to have benefited from ill-fortune, for it has brought out the ingenuity and inventiveness of those in whose hands the management is placed, so that when better times come—and surely they will—the economies and improvements now effected will be more apparent, and the advantages correspondingly greater.

AN HISTORICAL INDUSTRY.

AN historical spirit has evidently spread itself amongst mining men. Professions which are of a more recent creation, and which, consequently, are less permeated with Conservatism, may be content with the present as it is. With mining the case is different. The industry is an organic whole, the growth of tens of thousands of years. Its seeds were sown in those old-world days when the savage found that he could kill his fellow-savage more conveniently with a metal-tipped arrow than with a chipped stone, and when, by a sad experience, he had proved flints to be scarcely effective enough as weapons against the wild beasts which beset him. From that day to this there has been a never-ceasing advance up the scale towards perfection. Theory, as always, was begotten of practice, while practice moulded itself more into accord with theory. A slow, painful evolution of this kind accounts wholly for the "longing, lingering look behind," which many a metallurgist throws often enough into the past. As a science, he may say, mining was in those days practically non-existent. Regarded commercially, however, the industry flourished when most other industries were yet in the clouds. No Institution of Mining and Metallurgy sat making its "transactions" in London; but Cornish mining was spreading its fame along the shores of the Mediterranean, and drawing thither the valiant adventurer in his lust for a metal which, whatever its position to-day, might then be called precious. With an antiquity of this sort, the majestic prospect of which, like Paris from the Pantheon, or London from the Monument, makes the breath come in catches, it is hardly to be wondered at that many mining men live largely in the past. Possibilities of gold working in the Scotland of to-day give precedence in fascination to remembrances of the gold which was made into the far-famed £20 Scots pieces of James VI., of the Northern Kingdom. There is hardly need for saying that, historically regarded, Colonial mining is well-nigh ruled out of mind. If European mining has a history, the same word, in its larger sense, cannot be predicated of the Colonial industries, which are the growth of recent years, and are, in themselves, an admirable illustration of the extraordinary rapidity of modern movement. One has almost a necessity to confine himself within the narrow limits of Mediterranean shores, and of the indented sea-boards towards the north-westerly portions of the Continent. Wherever else one may light, all that lies beyond a few hundred years, either obscures itself in old woman's tales, sometimes dignified by the name of tradition, or if more clearly visible, still rests, to a large extent, upon an uncertain and shaky foundation. The fitful glimmerings of truth to be met with here and there have, like the metals they concern, to be sorted from the alloys with which a horrent polytheism, or an equally horrent reference of natural phenomena to supposed demoniacal agency, has encumbered them. To the student of the spirit, rather than of the fact, these imaginative misinterpretations have assuredly their own great value. The habits of mind they reflect may even come as a delightful relief from the crass materialism and the unindividualistic monotony that threatens to smother to-day the fire that is in mankind. Does there linger more fascination about an assay of so many ounces to the ton than to the legend how the hero, in deadly fight, shed his blood upon the ground, and how the blood, by the virtue that was in it, turned itself into the purest and most precious of metals? Have the oil springs that bubble out among the Indian hills more fascination for the thoughtful mind than the saying that there, if anywhere, lies the foul Avernus, or the tradition recorded in many a writing deemed sacred, of a curse laid by a mighty one upon the earth in vindication of eternal justice and punishment of wayward and arrogant humanity? To these things, and the spirit that is in them, to an antiquity that awes the mind into complete quiescence, to a tradition which joins the New Age to the Old and the Old Age to one still older, an industry owes much, and there is cast upon it in discharge of the obligation a heavy responsibility to fulfil.

NOTES AND COMMENTS.

THE past week has been one upon which we shall look back with strangely mixed feelings. From a mining and commercial point of view, nothing has transpired deserving of complaint and productive of uneasiness. The mining market has displayed promising healthiness—the South African department of it especially. The stock and money markets, too, have exhibited a cheerful tone, and nothing in this phase of activity has contributed to depress us. Still trade is very bad; the aspect looks dull; and these signs seem but fitful gleams of sunshine on a cloudy day. It is most unfortunate that, at such a time, there should happen this crisis in the political world. For it is a crisis, from whatever point of view we may regard it. To those who look at the matter calmly, and without prejudice, they can see that, if human weakness is displayed, it can be made fruitful of most serious consequences. That this weakness will be displayed is the prophecy of many who do not accustom themselves to look upon the surface of political movements. They feel that the result of it all will probably be an appeal to the country, and what that will mean to trade needs no instruction from us. Just as we thought the lengthy gloom which has enveloped us was passing away, and just as we were gazing upon the first evidences of light, we are overshadowed by another cloud of ominous aspect. Wisdom, however, can save us from the threatening consequences, and that this virtue will be displayed is our only hope.

THE latest news from Mashonaland shows that the settlement of the country is proceeding satisfactorily. There is a very general laying down of arms, and the Matabele, in common with their Mashona neighbours, are ploughing and sowing for the coming season. The King—who was dead and is alive again—is still far beyond the Shangani, suffering severely from gout, deserted by nearly all his indunas, and in a really miserable condition. Owing to the frightful state of the country, consequent upon a fortnight's rain, Colonel Goold-Adams has been prevented from proceeding up the Shangani to the scene of Major Wilson's massacre. He will, however, proceed as soon as the weather is clear. But what is of more direct interest to our readers is the daily discovery of new reefs, bearing visible gold The precious metal, according to all accounts, is abundantly distributed all over the country, so that we may confidently look forward to this part of the world as a prospective field for mining enterprise.

THE report of the directors of the New Aurora West Gold Mining Company, for the half-year ending December 31, 1893, shows a loss of £5167 10s. 10d. on the six months' working. This will, no doubt, have a depressing effect upon the shareholders, which will only be relieved by the fact that uncontrolable circumstances, in a considerable degree, have been the cause of it. There has been an increase in the cost of working of 5s. 0·968d., attributable to the scarcity of native labour, resulting from the smallpox epidemic, illicit liquor traffic, and other causes. In consequence of this, of course, the general manager has been unable to keep the battery fully supplied with ore, which means that the returns have been diminished to that extent. Under such circumstances it is a poor palliative to administer sympathy, yet that is all the solace one can give. In October last year, it will be remembered, sanction was given to the directors to increase the capital of the company from £80,000 to £120,000, by the creation of 40,000 new shares of £1 each. The board have not yet seen their way to give effect to the resolution, but they state they will act when an opportunity occurs favourable to the shareholders. Any issue of this new capital they intend to offer, in the first instance, to the shareholders. The directors admit, in as many words, that the half-year under review was a poor one for the shareholders, but go on to give as their opinion that evidences appear to justify the expectation that current and future periods may be as satisfactory as before the last half-year. This, of course, will be taken for what it is worth. It will be noted they do not state positively there *will* be an improvement, but the consolation is that in human affairs—especially in the phase of mining—one never knows.

MUCH attention is being directed at the present time to th City and Suburban property, and deservedly so. For some time the public have regarded the shares of this concern with marked favour, and this week shows no abatement. This week's mails bring the gratifying information that favourable progress is being made at the mine, and that arrangements for the new mill are fast approaching completion. A great feature in the new rock-house is an ingenious contrivance for the separation of the waste rock from the gold-bearing banket. This consists of a revolving sorting table, with a capacity of 30 tons an hour, above which shear-shaped guides are fixed, which cause the accumulated sorted rocks to be swept off into the ore-breaker below. The mill engine, which will shortly be erected, will be similar in type to the air-compressing engine, and capable of driving 160 stamps. The shares of the Simmer and Jack Company have also been in strong demand, and in connection with this it is interesting to hear that there are 150,000 tons of tailings awaiting treatment; and the rate of production of the present mill is 8000 tons monthly, while the monthly capacity of the cyanide works is reckoned at 16,000 tons. There are, therefore, many months' hard work in prospect for the newly-erected machinery. The tailings, it is stated, carry on an average 3½ dwts. of gold, and allowing 60 per cent. for extraction, a roughly estimated output of 1600 ounces of pure gold may be expected.

ALMOST daily do we receive confirmatory intelligence of the richness of Western Australia. This part of the world has, of late, come so much to the front, that everybody seems to make it his business to know all that can be known respecting it.

One outgrowth of this feeling is the universal enthusiasm of the Press all over the world, and interviews with men who have visited the colony have now become essential and constant features. A representative of the *Adelaide Observer* has interviewed a Mr. T. G. Horn, who went on a visit to the Murchison Gold Fields, and in the course of conversation elicited from this gentleman his belief in the permanence of the field and its prospects. He stated that the route from Geraldton to Murchison is a well-watered track of 270 miles, the longest stage being 16 miles, while there are wells 8 or 9 miles apart along the whole of the rest of the way. Seventy miles of railway is to be constructed along the track by the end of March, the contractor having the right to run the railway for 10 to 12 months after completion. Cartage at present costs about £15 a ton, and the railway will mean a material reduction in this respect. Poles for telegraph lines are being delivered, about half the distance being already provided, and it has been stipulated that the line is to be put up in another ten months, although the contractor is willing, provided he can make satisfactory arrangements with the Government, to get the work finished in about four months.

It has been remarked in previous articles of this paper that water in Western Australia is rather scarce, and thus modifies, in a considerable degree, the value of it as a gold-producing country. This is especially a great drawback at Coolgardie, but means are being resorted to daily to minimise and remedy this obstacle. Mr. Horn informs us that water may be got in abundance by sinking from 50 to 100 feet at Four Mile, near Cue, which settlement is about 270 miles from Geraldton, whilst water is being got in the Day Dawn, Victory, and Trenton claims, along the Sailor Bill line of reef, at the Government Well, and at Butcher's Well. Supplies from the Government Well are at present being carried out daily to 8 or 10 miles for from 3d. to 6d. per gallon. Timber, that other great essential, does not, however, seem to be lacking. The supply of firewood, Mr. Horn said, will prove abundant for all purposes for a good number of years. He also produced some specimens, which he asserted were quite equal to those from the famous Bayley's Reward, though not quite equal to them in bulk.

Everything in the circular issued by the London Chamber of Commerce points to success as the probable result of the exhibition shortly to be opened at Antwerp. While, taken altogether, the various sections and classes provided by the management in disposing the plan of the exhibition, are promising to a degree, there are features about the Mineralogical Section which are especially hopeful. Whatever criticism may be brought against other and, perhaps, minor branches, here, at all events, every encouragement is offered for the organisation of a really good display. The United Kingdom has been given, speaking comparatively, a fairly large space for its arts and industries, among the first few of which, in order of importance, come the ores and mining appliances. That a good deal of responsibility remains with mining men for supporting the credit of their profession, which in past times has stood so high, is obvious. Nor have they upon other occasions been at all backward in fulfilling their responsibilities in this connection. Wherever the travelled part of the world has been gathered together within the walls of a modern exhibition, with any pretensions to celebrity, there has generally been a creditable collection of stalls devoted to the industry. It is difficult to see why upon this occasion, too, there should not be as honourable a British mining display as at similar times in the past. That it may be so will be the hope of every one who is interested in this profession.

Mr. Cochran Patrick, in his recent lecture upon early Scottish Mining, hardly gave us any hope for a revival of gold mining in the northern country. There is something about this which seems almost a slight upon the ultra-Cheviot world. There is workable gold in the Principality of Wales, and why not in the land of the bagpipe and the tartan? Perhaps fate has here sought to effect a preservation of the unities. Scotland is the land of philosophy, and could hardly, for reputation's sake, be the *locus* of a gold fever. The philosophy of Hamilton, Reid, and Ferrier would hardly commingle in anything like a satisfactory homogeneity with an eager speculative spirit, unmodified by the distance of its object. Several gold mining and gold process companies there are sitting in Glasgow, but the ocean rolls between them and their property. Here is discoverable none of the incongruity which would follow upon a sudden find of the yellow metal within view of Edinburgh Castle, or near the ancient Hall of Glammis. From this one point of view it might be seriously questioned whether Scotland may not have something to be thankful for in the apparent slight which Nature has put upon her.

The directors of the La Plata Mines (Limited) have now formed their first subsidiary enterprise, viz., the Lion (Mozambique) Gold Company (Limited), the capital of which is £50,000. Of this £28,000 is to be reserved for working capital, and the balance is to be offered to the La Plata Mines shareholders, on terms which will practically assure them a bonus of 50 per cent., besides securing to them any advantages which might otherwise accrue to promoters or underwriters. In a circular issued to the shareholders, it is stated that conclusive proof of the existence of gold on these properties has been furnished by Mr. Ninness, the agent of the Gold Fields Company, and Mr. Charles J. Alford. The latter gentleman is, at least, well known as in the front rank of his profession, and he has examined and approved the selection of the "Lion" and "Tiger" claims, and it is upon his report and recommendation that the proposed expenditure on the former property is to be made. Great value is to be attached to such a recommendation, and, consequently, failure in obtaining the necessary capital will hardly be anticipated. The latest news from Mr. Niness, which will be found amongst our "Reports from the Mines," is of a distinctly encouraging nature. From pannings, which Mr. Alford himself saw, Mr. Niness is satisfied that the company has rich alluvial claims, which, if worked economically, will pay handsome profits. It looks altogether a most promising undertaking.

With some reservation it may be said that proposals to increase the capital of a company may argue a satisfactory prospect of future development. This would, perhaps, appear to be the case with the Agnes Block Company, and the surmise is fully borne out by considerations as to the general position of South Africa, commercially regarded. There would hardly seem to be any doubt that when the several projected railways northwards have become accomplished facts, the progress of our South African colonies will proceed with great rapidity. It only needs to remember the alacrity with which large towns have sprung up in the past—towns which, though they may not sustain a comparison with our own townships at home, are at least well to the fore in the list of those in the various colonies—to realise how great a possibility lies in the future, and which will become an actual realisation when once the necessary conditions of movement are fulfilled. It is obviously necessary that a company, whose property is situated amid a general advancement shall, if it do not wish to court absolute retrogression, keep pace with its surroundings, and to do that requires additional outlay. In arranging to meet that outlay the shareholders may be comforted by the reflection that it is but the necessary step towards a full realisation of their hopes, and so give their votes for it with complacency, tempered by a far-seeing glance into the future.

OUR CITY ARTICLE.

Friday Evening.

THE MINING MARKET.

A Strong Week for Kaffirs.—Chartered especially firm.—A General Advance in Gold Shares.—Miscellaneous quieter.—Indian Securities rather weak.

During the past week the Mining Market has undergone several changes, the weaker tone in the miscellaneous section of it being accountable for this. The South African section has, however, shown remarkable strength, nearly every class of security displaying activity and improvement. The beginning of the week was, as is well known, occupied by the carry-over arrangements, but this was accomplished with the greatest ease. Indeed, as regards rates, there is no difference perceptible between this and the last settlement. In the case of gold and land shares light rates prevailed. The making-up prices were generally in favour of holders. After the settlement interest continued to be centred on Henry Nourse, Jumpers, Langlaagte, and Simmer and Jack, which shares have been strong throughout the week. City and Suburban have also attracted great attention. Everything connected with this property appears to be in a satisfactory condition. We have received information from the mine that everything there is as it should be. The reports to hand are certainly encouraging, and are quite sufficient to make the shares attractive. Crown Reefs have not been so strong, whilst similar remarks may be used with respect to Stanhope and Wemmer On Tuesday, New Chimes were especially strong, as well as Village Main Reefs and Geldenhuis Deep, the improvements in each being large. In the South African department, Chartered have been a conspicuous feature, and have, this week, shown remarkable strength. Confidence is, apparently, now being restored. We daily receive news of the peaceful settlement in Mashonaland. Although it is doubtful whether Lobengula is dead, it is quite certain that if he be alive his power to disturb the pacification now setting in has departed. The Matabele are laying down their arms in great numbers, and everyth ng is tending towards peaceful acts. In conjunction with this we hear of the discovery of new reefs, and receive confirmatory intelligence of the gold wealth of the country. We wish it could be said that in sympathy with the South African department miscellaneous securities had also exhibited strength. On the contrary, as we have already remarked, they have displayed an unaccountable weakness. Probably the less said about them the better. Notwithstanding the encouraging report of the Broken Hill Proprietary Company, which has been received this week by mail, little effect has been produced upon the shares. The price of silver, of course, is in a great degree accountable for this. But for the present, this metal has a firmer tendency, although it is doubtful how long the improvement will continue.

British Mines.

Business in the Cornish market has been very limited this week, and until there is some check to the demand more in tin, it is useless to expect any improvement in shares. Just now holders appear willing to wait patiently, with the hope that better prices will ensue shortly, and speculators are waiting with the notion that they will be fortunate enough to buy at the lowest. However, very few succeed in selling at the highest and buying at the lowest. With good tin ore selling at £40 per ton, very few of our mines can make any profit, and so long as the metal remains at £65 10s., the dividends must be very small. Some of the mines, such as Killifreth, South Crofty, Carn Brea, East Pool, Tincroft, and Dolcoath are looking well, and all that is wanted is a better price for tin.—Risen: None. —Fallen: Carn Brea, 5s.; Cook's Kitchen, 5s.; Dolcoath, 40s.; East Pool, 10s.; Killifreth, 2s. 6d.; South Crofty, 2s. 6d.; Tincroft, 5s.; and West Kitty, 15s.

South African Shares.

The early part of Monday morning was, of course, mainly devoted to carry-over arrangements, but this business occupied but little time. Rates ruled easy. The contangos on Chartered and Consolidated Gold Fields hardened late in the day from ¼d. to 1¼d., and from 1¼d. to 2¼d. respectively. De Beers were dull at 4¼d. to 7¼d., Jagers at 6d. to 9d., and Gold shares at ¼d. to 1d. in the pound. The making-up prices showed South Africans to be in about the same position as they were a fortnight ago, with one or two exceptions. After this business was settled Kaffirs came in for a fair amount of activity, the shares, on the whole, displaying firmness. There was again a sharp demand for Jumpers, the expectation being that February would show a large yield. The price went up to nearly £4. Henry Nourse, Simmer and Jack, Chimes, Primrose, Geldenhuis Deep, and South Simmers were all firm at improvements, as well as Langlaagte, Durbans, Nigels, Wolhuter, Meyer and Charlton, and one or two others. A flat tone was exhibited in Geldenhuis Estate and Stanhopes. Chartered and Diamond shares were weak. On the other hand, a rally took place in Oceanas and Zambesias. Kaffirs maintained their firmness throughout the following day, most of the shares which had improved on Monday again showing advances. Chartered and Diamond were, however, dull. Wednesday witnessed, if anything, increased activity in this market, both Randt and Kaffir shares being strong. This was no doubt, influenced by the encouraging news received from the Randt and Mashonaland. Amongst gold shares, Cities, Henry Nourse, Geldenhuis, Meyer and Charlton, Langlaagte, and Robinson were most conspicuous, and recorded the largest advances. Improvements also took place in Croesus, New Primrose, Glencairn, Jumpers, Heriot, Simmer and Jack, Wolhuter, and Village Main Reef. Amongst land shares, a large business was transacted in Chartered, the price recovering to 29s. 10½d., an improvement of 2s. Goldfields Deep were firm, whilst Consolidated Goldfields displayed a strong tone. Diamond shares improved, De Beers hardening to 15⅛, and Jagers to 14⅜. This was consequent upon the announcement of the decision of the American Senate to put diamonds on the free list, but when it became realised that the effect would not be felt for some time to come the shares relapsed again, De Beers leaving off at 15, and Jagers at 14⅛. Later, this market has shown a little irregularity, profit-taking leading to a slight reaction. The result of this has been that Chimes, Langlaagte, and Villages have declined to some extent, as well as Jumpers, Henry Nourse, Crowns, Ferreiras, Jubilees, Geldenhuis Estate, and Reits. However, there is an undercurrent of firmness. Cities have again received favour with a rise. Meyer and Charlton are still strong, whilst Robinsons, Simmers, and several others are firm. The enquiry for diamond shares has shown little change. Chartered have again been a conspicuous feature, but Consolidated Gold Fields have not exhibited strength in sympathy. Other land shares are strong. The following are the week's changes: — Risen: Alexander Estates, 1s.; Bechuanaland, 1s. 3d.; Chartered, 2s.; Champ D'Or, 1s. 3d.; City and Suburban, 10s.; Consolidated Deep, 3s. 9d.; Edwin Bray, 1s. 6d.; Exploration, 2s. 6d.; Geldenhuis, 2s. 6d.; Glencairn, 3s.; Gold Fields of Mashonaland, 1s. 3d.; Grahamstown, 1s.; Henry Nourse, 10s.; Heriot, 2s. 6d.; Johannesburg Water Works, 2s.; Jumpers, 7s. 6d.; Langlaagte, 5s.; Meyer and Charlton, 2s. 6d.; Mashonaland Agency, 1s. 3d.; New Belgium, 6d.; New Chimes, 2s. 6d.; New Croesus, 3s. 9d.; New Primrose, 5s.; Nigel, 2s. 6d.; Potchefstroom, 1s.; Princess Estate, 4s.; Robinson, 2s. 6d.; Simmer and Jack, 5s.; South African Exploration, 25s.; Sutherland Reef, 1s.; Transvaal Estates, 1s.; ditto, Exploration, 2s.; Wemmer, 2s. 6d.; Wolhuter, 5s.; Zambesia, 5s.—Fallen: Aurora, 2s. 6d.; De Beers, 2s. 6d.; Moodies (2s. paid), 1s.; New Jagersfontein, 2s. 6d.; Northern Transvaal Land, 6d.; Oceana Development, 1s. 3d.; Rietfontein, 2s. 6d.; Roodepoort (Kimberley), 6d.; Stanhope, 5s.; Whitersrand Knights, 6d.; Worcester, 2s. 6d.

Indians and Miscellaneous.

Business in this department of the market was, of course, much interfered with by the carry-over arrangements. The dealings, after this was disposed of, were devoid of interest. Amongst Indian shares Nundydroog relapsed ⅛, whilst in other descriptions Broken Hill Props. recovered to that extent. Glenrock were in good request, and Day Dawn P.C. were enquired for, whilst there were further dealings in Idahos. In contrast to the South African market, business in miscellaneous shares was rather slack on Wednesday. Apart from small improvements in St. John Del Rey and West Argentine, and unimportant relapses in Columbian Hydraulic, Mysore Reefs, and Nine Reefs, nothing worth mentioning occurred. A recovery of ⅛ took place in Rio Tinto. Towards the close of the week this market still exhibited quietness, though it is said that a fair amount of business was transacted. Owing to the decline in the price of silver, Broken Hill Proprietary have again been easier. Indians are rather weak. Del Reys and Golden Feathers have been stronger, whilst Idahos have been dealt in. The following are the week's changes: — Risen: Brilliant Block, 3s. 9d.; Copiapo, 1s. 3d.; Golden Feather, 6d.; Golden Gate (Cal.), 6d.; Mysore Reef, 1s.; Wentworth Priority, 1s. 3d; ditto Ordinary, 6d. Fallen: Cape Copper, 1s. 3d.; Champion Reef, 1s. 3d.; Colombian Hydraulic, 6d.; Coromandel, 1s.; Day Dawn P.C., 9d.; Elkhorn, 6d.; Jay Hawk, 1s.; Mysore, 3s. 3d. (allowing for dividend); Mysore West, 9d.; New Guston, 1s.; Nine Reefs (2s. paid), 6d.; Nundydroog, 1s. 3d.; Pahang Corporation, 6d.; Richmond, 1s. 3d.; St John Del Rey, 6d.; Tharsis, 2s. 6d.; Tolima A, 10s.; ditto B, 10s. Dividends declared: Nundydroog (fully paid), 1s.; ditto (8s. paid), 5d.; Mount Morgan, 6d.; Tolima A, 10s.; ditto B, 10s.

THE STOCK MARKETS.

A cheerful and fairly active tone.

To-day business on the Stock Exchange has exhibited a fairly active and cheerful tone. Investment buying, however, has been more restricted, and Consols have again receded a fraction, while other first-class securities are also easier. Home railways have been firm, and are a fraction higher in some cases, but South-Eastern Deferred are weak. In the Foreign Department Argentines are weak on a rise of four points in the gold premium. Silver securities are dull, and practically neglected. Among Continental stocks Turkish continue to receive most attention, and are still rising. American railroads show much more buoyancy than recently. Louisvilles have advanced a point, as the January statement is considered satisfactory, and Norfolks are also strong on an increase in the net receipts. Grand Trunks have been firmer in sympathy with the improvement in Americans.

THE MONEY MARKET.

Little alteration in the Bank return.

The weekly return of the Bank shows little alteration beyond the addition of the other securities and deposits, as the result of market borrowings. Including £196,000 gold received from abroad, the stock of coin and bullion was augmented by £280,756, but as the note circulation expanded £360,330, the reserve was lowered by £79,574 to £22,522,124. An increase of £2,441,968 in the other securities represents the discount and loan business done with the market, and of this £1,603,356 was added to the bankers' deposits, while the public deposits rose £633,318, owing to the tax payments. The increase in the rest indicates a dividend of 4½ per cent. for the past half-year, the lowest since 1877. The proportion of reserve to liabilities fell 3·33 per cent., to 56·38. According to the weekly return of the Bank, the item "rest" has been increased during the week by £134,584, making the total £3,666,621. A dividend at the rate of 9 per cent. per annum will absorb £654,885, leaving the "rest" at £3,011,736. For the corresponding period the dividend was at the rate of 9½ per cent. per annum, and for the half-year ended last August it was 10, while the last occasion on which the rate was as low

was for th half-year to February 28, 1 7/, when the rate was also 9. We append our usual table:—

ISSUE DEPARTMENT.

Notes Issued	£44,409,665	Government Debt	£11,015,100
		Other Securities	5,784,900
		Gold Coin and Bullion	27,609,665
		Silver Bullion	—
	£44,409,665		£44,409,665

BANKING DEPARTMENT.

Proprietors' Capital	£14,553,000	Government Securities	£8 938,533
Rest	3,866,621	Other Securities	28,525,879
Public Deposits	10,135 201	Notes	20,101 265
Other Deposits	29,469,384	Gold and Silver Coin	2,420,859
Seven Days and other Bills	162,380		
	£57,986,586		£57,986,586

The return shows the following changes when compared with the previous statement:—Circulation Issue (increase), £242,958; Circulation Active (increase), £360,330; public deposits (increase), £631,318; other deposits (increase), £1,03 3 5; Government securities, no change; other securities (increase), £2,441,968; coin and bullion (increase), £280,756; seven days' and other bills (decrease), £8864; rest (increase), £134,534; notes in reserve (decrease), £117,345; total reserve (decrease), £79,574.

To-day there has been a fair demand for short money, and the market is still rather tight. Not much benefit has been felt as yet from the repayment of the £900,000 balance of Treasury bills, but the banks will now be releasing part of their balances, and the dividend distributions of the last day or two will have an effect in producing an easier feeling. Rates for short loans are firm at 1½ to 1¾ per cent., while discounts are a shade easier at 1¼ per cent.

CARDIFF AND SOUTH WALES COAL AND IRON TRADE REPORT.

CARDIFF, Friday Evening.

During the past week the steam coal trade has shown more animation, and as tonnage has been plentiful, shipments have been unusually heavy; the supply, however, is still greater than the demand, and this circumstance has checked any upward move in prices. The demand for house coal has been satisfactory, both for inland consumption and shipment, and there has been an average enquiry for coke and patent fuel. The closing prices to-day were as follows:—Steam coal, 13s. to 13s. 6d.; seconds, 12s. 6d.; dry coal, 10s. 6d. to 11s.; small, 6s. to 7s.; patent fuel, 12s. 3d.; best households, 13s. 6d. to 14s.; No. 3 Rhondda large, 12s to 12s. 6d.; No. 2 large, 9s. 6d. to 10s.; foundry coke, 18s. to 18s. 6d.; and furnace, 16s. to 17s. per ton. The iron and steel market is unchanged. Steel rails (heavy sections) are quoted at £3 15s., and Bessemer tin-plate bar £4 2s. 6d. per ton. Tin plate prices unaltered. Market dull.

FORTHCOMING MEETINGS.

*** We shall be obliged if Secretaries or other Officials of Mining, Railway and other Companies will be good enough to advise us as early as possible of the date, time and place of their forthcoming meetings whether statutory, semi-annual, annual, general or extraordinary, confirmatory or adjourned—in order that particulars may be announced for the benefit of our subscribers and more particularly our country readers. Balance sheets, reports and other matter to be submitted at such meetings should, where possible, accompany the intimations of the meetings sent*

Name of Company.	Date.	Nature of Meeting.	Place.	Time
Columbian Gold Dredging Company	Mar. 5	General	Cannon-street	2.30 p.m.
Nooitgedacht Estates and Mines Company	Mar. 5	General	Cannon-street	2.30 p m
Gold Estates Transvaal Co.	Mar. 5	General	Cannon-street	2 p.m.
San Bernardo Mining Co.	Mar. 6	General	Winchester Ho	12 a.m.
Imperial British East Africa Company	Mar. 8	General	Winchester Ho	3 p.m.

WEST AUSTRALIAN GOLD FIELDS.—A correspondent, who is manager of several important colonial mining companies in Western Australia, writes as follows:—"The development of the mineral resources of this colony is now going on apace, and almost every mail from the fields brings news of fresh and important discoveries, and as the rainy season advances, which will allow of further prospecting being carried on, there is no doubt that further valuable finds will be made; in fact, good payable gold is known to exist eastward of the present field. One redeeming feature of the gold fields district is the annual rainfall, which provides in ordinary cases fresh water for five or six months in the rock holes, soaks, &c. At Coolgardie, a veritable El Dorado of the West, a Government party is engaged with the Kaufmann bores, sinking in the hope of obtaining artesian water. In the Star of the East Mine, in the main shaft, the water flows in as quickly as it is taken out; it is good, potable water, and is an immense advantage to this mine. This company bids fair to become one of the biggest things in the colony. So far, four fortnights' crushings are to hand, showing 510 tons of stone have yielded 2135 ounces of gold, averaging upwards of 4 ounces to the ton. A fair number of these shares are held in England, so this should prove interesting. I have just seen a draft prospectus of the West Australian Gold Fields (Limited), shortly to be issued in London, and certainly think the public are being offered shares in a very sound undertaking at a very moderate figure. The concession is, without doubt, a very valuable one, as it is confidently believed here that rich gold-bearing reefs exist on the Hampton Plains land. Gold-bearing reefs are proved to exist within the concession, but they are, so far, undeveloped; but, independent of the concession, good payable claims can be bought for a small cash consideration and a certain quotient of shares, and with the capital it is intended to issue, many highly payable properties may in this manner be secured. I am pleased to notice that the Government have, at last, wisely resolved to purchase the last parcel of gold from Bayley's, and exhibit it in London. This exhibition should prove that the accounts of the richness of Bayley's have not in the least been exaggerated. The establishment of an office in London, where reliable information can be obtained, would, it is believed, greatly assist in furthering investment of English capital in the colony, especially if the office were placed in charge of someone intimately acquainted with the development of the fields up to date, and having at his finger's ends all particulars in connection therewith. This, I advocate, should be put in hand at once, and the companies here should combine to support the establishment of such an office."—*Financial News.*

A NEW GOLD EXTRACTOR.—Mr. Saupe, of Melbourne, has shown us a plan of a new quartz crushing machine, invented by him, which is designed to operate without the use of water. The material is fed into the pan of the crusher, and when pulverised is drawn out by means of an exhaust fan, and is thrown into a screen in the separator or extractor. This screen, revolving, is covered with wire gauze of four different gauges, and delivers the crushed material into four hoppers, from whence it is blown on to their respective tables, depositing the matter into hoppers in degrees of fineness regulated by gravity. The gold is then separated from the baser matter and deposited in its box. Mr. Saupe has been highly complimented on his invention by many practical men.—*Australian Mining Standard.*

ELKHORN.—Bullion produced in the mill for week ending February 24, 8200 ounces.

LATEST FROM THE MINES.

CABLEGRAMS AND TELEGRAMS.

AUSTRALASIAN.—The directors have received a cablegram from the mine, dated February 28, giving the result for the past four weeks crushing as follows:—"24 days, 332 tons, 217 ounces. £760 value, £200 profit."

AUSTRALIAN BROKEN HILL CONSOLS.—"Output of silver for the month of February 1516 ounces"

BAYLEY'S REWARD.—January 15: Yield for week 500 ounces gold; total gold on hand, 1500 ounces. Stope and drives looking as well as ever. Cut reef in crosscut 100 feet level, main shaft, 74 feet from shaft; reef 6 feet wide, showing good stone. Main shaft 218 feet. Increase of water continues.

BROKEN HILL PROPRIETARY.—For the week ending the 1st inst. 9664 tons of ore were treated, yielding 802 tons of lead, containing 243,532 ounces silver.

EXPLORATION COMPANY.—ALASKA TREADWELL GOLD.—A cablegram from Alaska announces the February clean up as follows:—Shipment of bullion, $44,951; tons of ore milled, 20,487; tons of sulphurets treated, 324; of bullion there came from sulphurets, $10,617; estimated gross expenses for period have been $27,811. The net profits available for dividends for the first nine months of the present financial year are, therefore, about $372,000, without taking into account profits from store, estimated to be more than $5000.

GOLDEN GATE OF CALIFORNIA.—The following has been received by cable from Colonel Frank McLaughlin, the company's general manager at Oroville:—"Purchase 'Lucky Bob' extension completed. Ledge face of drift is looking first rate."

GUADALCAZAR QUICKSILVER.—The quantity of quicksilver drawn off for the week ending February 22, as cabled from the mines, amounts to 3700 lbs.=49⅓ flasks.

JAY HAWK AND LONE PINE CONSOLIDATED.—The directors have received the following from the manager, by cable:—"Owing to the severe frost some of the water pipes have burst, repairs will be finished in five days, when mill will start again. The ore in the bottom of the Bonanza Mine continues rich; the lode in the Excelsior Mine is improving; and the 1400 feet north level Lone Pine Mine is in rich ore, assaying 45 to 50 ounces.

LISBON-BERLYN.—In reply to cable instructions from the board to pass the rich Theta ore immediately through the mill, and the cyanide plant when completed, a message has been received from the manager reporting that the cyanide vats are completed and everything in readiness, that the new mill works well, and that he is prospecting the Theta Reef with the greatest possible vigour, and that the prospects are decidedly encouraging.

MARBELLA IRON ORE.—The directors have received the following telegram from the mines:—"Output of ore for February, 692 tons."

MOSMAN GOLD.—The directors have received the following cablegram from the manager at Charters Towers:—"Have crushed during the fortnight 285 tons of quartz from the Wyndham shaft for 254 ounces of gold. The expenses (both Wyndham and North Australian Mines) for the fortnight are £1000. I estimate the value of the stone at grass (upon which mining expenses have been paid) at £2250. The approximate value of this return is £850."

MOUNT MORGAN.—The directors have received the following telegram from the head office, Rockhampton:—"We pay £25,000 on 2nd March, being dividend of 6d. per share (free of dividend tax) for the month of February."

MOUNT ZEEHAN (Tasmania).—The following telegram has been received from Hobart, dated 27th inst.:—"Have shipped per s.s. *Salier*, 90 tons concentrates. Treated during past fortnight 325 tons of ore, yielding 40 tons 13 cwts. of concentrates containing about 28 tons 9 cwts. of lead and 2845 ounces of silver. Will ship by first steamer 90 tons of gossan containing about 10,800 ounces of silver. Frances lode in prospecting shaft is 4 feet wide, of which 18 inches splendid ore."

MYSORE WEST GOLD.—Tank Block: The water in the south shaft having now been forked, the mining manager telegraphs as follows:—"Recommend sinking south shaft 22nd day of February, and have sunk 3 feet since. In the 354 feet level driving north the lode in the end is 2 feet wide, and carries 1 ounce per ton."

PAHANG CORPORATION.—The directors have received the following cablegram, giving the output for January:—"In 14 days (of 24 hours each) 325 tons of stone were crushed, producing 21 tons 6 cwts. of black tin; 20 head of stamps. Working costs £900."

SHEBA GOLD.—The directors have received the following cablegram from the general manager for the month of February: 5600 tons (2000 lbs. per ton) of ore crushed, yield 2585 ounces; 4600 tons (2000 lbs. per ton) of tailings, yield 3055 ounces; 60 tons (2000 lbs. per ton) of concentrates (assay value), 346 ounces —5986 ounces.

SPITZKOP FARM.—Result for January, 80 ounces 1 dwt., value £280 5s. 3d., exclusive of hydraulicing, which is still proceeding satisfactory. With respect to the latter, the following is an extract from a letter received from the manager on February 27:—"The wash in places partakes more of the character of a cemented or conglomerated mass, which is usually rich in gold."

VICTORY (Charters Towers).—The London office has received the following cablegram from the head office in Sydney:—"Crushing for the fortnight from No. 1 shaft, 119 tons for 116 ounces; crushing for the fortnight from No. 2 shaft, 270 tons for 340 ounces; total, 389 tons for 456 ounces of gold." The above cablegram was delayed in transmission.

WASSAU (Gold Coast).—The produce of the mine for the month of December last, given in our circular of the 19th ult. as 282 ounces, was incorrect, owing to an error in the transmission of the cablegram, the correct result being 365 ounces standard—which realised £1422 6s. 3d. The mill worked 22 days 7 hours, and crushed 288 tons of ore, giving a yield of 1 ounce 5 dwts. standard per ton. Cablegrams have since been received advising the remittances for last month as 328 ounces, and a yield of 1 ounce 2 dwts. per ton.

WENTWORTH GOLD FIELDS PROPRIETARY.—The following cablegram has been received from the mine:—"The total amount of ore crushed since we cabled is 1100 tons, the gross yield being 1500 ounces of gold. We are now crushing ore from the Spicer's vein 500 feet level, the north-west drive 400 feet level from Phœnix underlay shaft, the Phœnix No. 2 vein 300 feet level, and from the workings above the cross cut on the 300 feet level at the Aladdin's boundary. The new main shaft has been sunk a further 30 feet. Prospecting works are being pushed ahead in several places.

THE METAL MARKETS.

LONDON METAL MARKET.

THE METAL MARKET—LONDON, MARCH 2.

Copper.

WE have had this week a flat and almost featureless market for g.m.b's., with transactions on a much smaller scale than last week. On Monday we opened at £40 18s. 9d. s.c., and £41 7s. 7d. three months, spot changing hands later in the day at £40 17s. 6d., and then again at £40 18s. 9d. Tuesday brought a momentarily somewhat firmer tone, and £41 was paid for spot, which, however, receded to £40 18s. 9d. before the day closed. Wednesday and Thursday witnessed no quotable change in values, but to-day business was done as low as £40 10s. s.c., and we closed flat, £40 7s. 6d. to £40 10s. s.c., and £40 17s. 6d. to £40 18s. 9d. three months. The statistics for February show a total increase of about 200 tons in the visible supplies. Deliveries and supplies were both on a sensibly smaller scale than those of January. In furnace material 7s. 6d. has been paid for about a thousand tons of Namaqua ore.

Tin.

The values of spot Straits on Monday ranged from £65 17s. 6d. to £66 2s. 6d., and on Tuesday £66 10s., the highest point of the week was reached. This improvement, due to the rise in silver disappeared with its cause, and by Thursday £65 10s. had been touched—that is, 2s. 6d. lower than the lowest of last week. To-day we have had a heavy drop in sympathy with silver, and sales were made at £65 10s. three months and £64 10s. s.c., the close being flat at £64 10s. to £64 12s. 6d. s.c. and £65 7s. 6d. to £65 10s. three months. In the Dutch market Billiton opened with spot at 40 fl. and declined to 39½ fl., which is the closing value, three months being at 40¼ fl.

Pig Iron.

The Glasgow market has ruled steady at 43s. 2½d. to 42s. 11½d. for s.c. Scotch, which closes at 43s. Hematite is quoted 45s., and Cleveland 36s. Scotch shipments last week are advised as 8918 tons, being an excess of 4699 tons over those of the corresponding week of last year.

Lead

opened with soft foreign at £9 7s. 6d., and closes rather easier at £9 6s. 3d. soft foreign, and £9 8s. 9d. for English. The tone is very dull, consumptive demand being at a low ebb at present.

Antimony.

The quotation, viz., £36 to £36 10s., remains unchanged, and the trade is of the slackest.

Spelter

continues dull, and closes at £15 10s. to £15 12s. 6d. ordinaries, and £15 12s. 6d. to £15 15s. specials.

Quicksilver.

Firsts are unchanged at £5 17s. 6d.; seconds are quoted £5 15s.

The following are to-night's (March 2) prices of metals:—

	£ s. d.	£ s. d.
Copper.		
Tough cake and ingot	42 10 0	43 5 0
Best selected	43 5 0	44 5 0
Sheets and sheathing	51 0 0	52 0 0
Flat bottoms	54 0 0	55 0 0
Chili bars	40 10 0	40 15 0
Good merchantable, spot, & 3 months respectively	—	0 0 7½
Copper tubes	—	0 0 5½
Alloys.		
Brass: Wire	—	0 0 5½
,, Tubes (solid drawn)	—	0 0 5½
,, Sheets	—	0 0 6½
Phosphor Bronze: Alloys II.	—	88 0 0
,, ,, III. or V. Cog Wheel Brand	—	93 0 0
,, ,, VII.	—	95 0 0
,, ,, XI.	—	90 0 0
,, ,, Vulcan brand A1 B.C.	80 0 0	85 0 0
Duro Metal	80 0 0	85 0 0
Sull's Metal	—	70 0 0
Ferrobronze: Ingots ...per lb.	0 0 6	—
,, Ordinary sheets, plates, bolts and bars	0 0 7	—
,, Screw bolts and nuts	0 0 8½	—
,, Pump rods, plain	0 0 7½	—
,, ,, finished	0 0 10½	—
Delta Metal: No. 4 (per ton)	—	73 10 0
,, Sheets and plates (per lb.)	0 0 10½	—
,, Bars, round, square, flat (per lb.)	0 0 9½	—
,, ,, hexagon (per lb.)	0 0 9	—
Tin.		
English, ingots, f.o.b.	70 10 0	71 0 0
,, bars	71 10 0	72 0 0
,, refined	72 10 0	73 0 0
Straits, spot and 3 months respectively	64 12 6	65 10 0
Australian spot, and three months respectively	66 17 6	65 15 0
Banca ,, (in Holland)	72 2 6	72 5 0
Tin Plates: Charcoal, best quality per box	0 16 0	0 18 0
,, ,, ordinary	0 14 0	0 15 6
,, Coke, best quality	0 11 0	0 12 6
,, ,, ordinary	0 10 3	0 10 6

These prices of tinplates are f.o.b. at Swansea; at Liverpool 6d. per box more.

Iron.		
Pig, c.m.b., f.o.b., Clyde, spot	—	2 3 0
,, Scotch pig, No. 1 Gartsherrie	—	2 11 6
,, ,, Coltness	—	2 17 0
,, ,, Clyde	—	2 9 6
,, ,, Govan	—	2 4 9
Bars, Welsh, f.o.b. Wales	—	5 5 0
Plates ,, ,,	—	6 5 0
Bars, Staffordshire, at works	—	5 12 6
Sheets ,, ,,	—	6 15 0
Plates ,, ,,	—	6 12 6
Hoops ,, ,,	—	5 17 6
Ship plates, Middlesborough	—	4 17 6
Steel: English spring nominal according to quality	9 0 0	20 0 0
,, ,, cast ,,	16 0 0	55 0 0
,, Rails at works, 50 lbs. per yard and upwards	3 15 0	3 18 9
,, ,, light, at works, according to section (extra)	0 10 0	2 0 0
Lead.		
Spanish or soft foreign	—	9 8 9
English pig, common	—	9 15 0
,, L.B.	—	10 5 0
,, sheet and bar	—	10 15 0
,, pipe	—	12 10 0
,, red	—	12 10 0
,, white	—	16 10 0
,, patent shot	—	11 15 0
Spelter.		
Silesian ordinary brands	15 10 0	15 12 6
,, special brands	15 12 6	15 15 0
English Swansea	16 2 6	16 5 0
Sheet Zinc	18 0 0	18 10 0
Antimony.		
Antimony	35 0 0	35 10 0
Quicksilver.		
Flasks, 75 lbs. warrants	5 15 0	5 17 6
Manganese.		
Ore, c.i.f., U.K. ports	per unit.	
1st quality, 50 per cent. and upwards	—	0 1 0
2nd ,, 47 per cent. to 50 per cent.	0 0 10	0 0 11
3rd ,, 40 ,, 47 per cent.	0 0 8	0 0 10
Aluminium.		Per lb.
98-99½ per cent. (guaranteed 98 per cent. min.)	in ingots (1 cwt. lots)	0 2 0
do do	(5 cwts. and up)	0 1 11
Nickel.		
98-99 per cent. guaranteed	0 1 7½	0 1 8½

CHROMIUM AND ALUMINUM.—A new process has been introduced for imparting hardness to aluminum by the addition of chromium. In consequence of the difference in the fusing points of the two metals certain precautions have to be taken to alloy them both, and if electrolysis is employed for the purpose, it is stated that one or another of the known methods can be used, and the alumina, salts of alumina, cryolite, &c., treated direct with a determined quantity of salts or oxides, chromium, granulated chromium, or chromium in any other suitable condition.—*Mining and Scientific Press.*

GATES IRON WORKS.—We are informed that the Gates Iron Works have purchased the buildings, machinery, stock, patterns drawings—in fact, the entire plant of the "Chicago Iron Works," who are well-known as manufacturers of high grade machinery. They will thus be placed in a better position to furnish machinery for the treatment of ores.

"THE MINING JOURNAL" SHARE LIST.

ABBREVIATIONS AND REFERENCES.—The following are the significations of the abbreviations and references which occur in the Share List:—*Ay*, Antimony; *A*, Arsenic; *Bl*, Blende; *Bx*, Borax; *C*, Copper; *D*, Diamond; *G*, Gold; *I*, Iron *L*, Lead; *M*, Mundic; *N*, Nitrates; *P*, Phosphates; *Q*, Quicksilver *R*, Ruby; *S*, Silver; *S-l*, Silver-lead; *Sul*, Sulphur; *T*, Tin; and *Z*, Zinc. * in the "called up" column of British Mines, signifies that the mine is conducted on "Cost Book" principles: † in the "Head Office" column of African Mines, signifies that the address given is not that of the head office, but of a sub- or transfer office and †, following the names of African mines, signifies that they are subject to the Limited Liability Law of the South African Republic.

*** *The following is by far the most complete and comprehensive list of mines, in whose shares business is being currently transacted, published. Additions will be made from time to time as occasion requires. Every effort is made to ensure accuracy, and Secretaries of Companies, Share dealers, and our readers generally, are cordially invited to co-operate with us to this end, by notifying us of any errors that may at any time occur. We desire it to be understood that, while our Share List will almost invariably be found correct; we do not hold ourselves responsible for any loss or inconvenience that may arise from possible inaccuracies.*

BRITISH MINES.

Name	Closing Price, Mar. 2, 1894.	Closing Price, Feb. 23, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Atlas .....*T*	—	—	1 0	—	0 12 6	12,000	Devon	Camborne.
Blue Hills .....*CT*	2/- 4/-	4/-	*	2/- May '81	6 11 6	6,000	Cornwall	Camborne.
Botallack .....*T*	—	—	*	—	51 4 6	2,220	Cornwall	St. Just.
Carn Brea .....*T*	12½ 13	13¼	*	2/6 Dec.,'93	21 5 0	8,000	Cornwall	Carn Brea.
Cook's Kitchen ..*T*	7/6 12/6	4/6	*	—	26 15 4	4,900	Cornwall	Camborne.
Cumberland .....*L*	—	—	1 0	5% May, '88	1 0 0	85,000	Cumberland...	7, Angel-court E.C.
Cwmystwyth	—	—	1 0	—	1 0 0	5,000	Cardigan	
Derwentwat'r.*CLZ*	—	—	1 0	—	1 0 0	10,08	Cumberland..	Manchester.
Devon Gt Cons.*CA*	1⅜ 1⅜	1⅜	5 0	3/- Nov. '93	2 0 0	10,2	Devon	8, Finsbury-circus.
Dolcoath .....*T*	57/- 68/-	70/-	*	5/- Jan. '94	9 12 6	4,7	Cornwall	Camborne.
Drakewalls *CTM*	—	—	1 0	—	1 0 0	100,000	Cornwall	Dashwood House.
East Blue Hills *T*	—	—	*	—	1 13 3	4,283	Cornwall	79¼, Gracechurch-st.
East Grassington *L*	—	—	1 0	—	1 0 0	20,000	Yorkshire.....	Palmerston-building
East Pool .....*AT*	10¾ 10¾	11¼	*	5/- Oct. '93	0 9 9	8,400	Cornwall	Illogan.
Gawton .....*CA*	—	—	50/-	—	2 7 0	12,00	Devon	20, Great St. Helens.
Great Laxey.....*L*	2½ 3½	3¼	4 0	5/- Apr., '92	4 0 0	15,000	Isle of Man ...	Douglas, Isle of Man.
Green Hurth .....*L*	—	—	1 0	-/6 June '89	0 19 0	32,000	Cumberland...	Newcastle.
Halkyn .....*L*	—	—	1 0	2/- Sep. '93	1 0 0	10,000	Flintshire.....	Chester.
Hexworthy .....*T*	—	—	1 0	—	1 0 0	18,335	Devon	6, Queen-street-place
Isle of Man .....*L*	—	—	5 0	5/6 Sep. '93	5 0 0	14,000	Isle of Man ...	Chester.
Killifreth .....*T*	3½ 3¾	2¾	*	3/6 Dec. '93	5 6 3	6,000	Cornwall	Truro.
Kingside.....*LR*	—	—	1 0	3/- May, 1892	1 0 0	15,919	Cardiganshire	6 Queen-street-place
Lead Hills .....*L*	17/6 22/6	22/6	6 0	3/- Sep. '92	6 0 0	20,000	Lanarkshire...	30, Finsbury-circus.
Levant .....*CT*	—	—	*	10/- Aug., '93	11 9 6	2,500	Cornwall	Penzance.
Lovell .....*T*	—	—	*	1/3 Nov., '91	1 16 7	7,165	Wendron	3, Gt. Queen-st., S.W.
Minera (New) ....*L*	—	—	5 0	3/- Mar. '90	5 0 0	9,000	Denbighshire.	Minera, N. Wales.
Nenthead & Tndle.*LZ*	—	—	1 0	6% Feb., '91	0 18 6	48,8 5	Northumberld	Newcastle-on-Tyne
New Balleswidd'n *T*	—	—	1 0	—	1 0 0	50,000	Cornwall	St. Clement's Ho., E.C
New Cooks Kitn.*TC*	—	—	*	—	10 18 3	4,900	Cornwall	Camborne.
Pedn-an-drea .....*T*	—	—	*	—	4 3 6	7,000	Cornwall	Redruth.
Phœnix United*TC*	6/- 7/-	7/-	*	1/- Mar. '90	6 9 9	12,000	Cornwall	Liskeard.
Polberro & Trev. *T*	—	—	*	—	1 11 6	18,000	Cornwall	37, Walbrook.
Prince of Wales*TC*	2/- 2/-	3/-	10/-	—	—	—	Cornwall	6, Draper's-gardens.
Roman Gravels .*L*	—	—	10/-	—	—	—	Salop	11, Queen Vic.-st., EC
Rushen .....*L*	—	—	1 0	5% Sept. '91	1 0 0	26,131	Isle of Man ...	Douglas.
So. Condurrow *TC*	5/- 10/-	10/-	*	3/6 Apr. '93	7 12 1	6,123	Cornwall	20, Great St. Helens
South Crofty *TA*	1⅞ 2	2½	*	—	16 16 6	6,120	Cornwall	Pool, Cornwall.
South Darren ... *L*	—	—	*	—	—	—	Cardiganshire	8a, Austin Friars.
South Frances ...*T*	—	—	*	—	—	—	Cornwall	Redruth.
Tincroft .....*T*	10½ 11	11¼	*	3/- Dec. '93	18 1 0	4,500	Cornwall	Carn Brea.
Weardale .....*L*	—	—	4 0	1/3 Oct. '90	15 7 6	6,000	Cornwall	3, Lombard-court.
West Frances ...*T*	1¾ 1¾	1¾	—	2/6 May, '89	1 5 0	50,000	Durham.....	Camborne.
West Kitty .....*T*	6½ 7	7¼	*	4/- Jan. '94	15 15 1	6,144	Cornwall	37, Walbrook.
Wheal Agar ...*TA*	2 2½	2¼	*	2/6 Aug. '88	0 12 0	6,000	Cornwall	Redruth.
Wheal Basset ...*TC*	2¾ 3¼	3½	*	10/- Apr. '88	22 0 8	6,000	Cornwall	Redruth.
Wheal Friendly..*T*	2/- 4/-	4/-	*	—	12 0 10	6,144	Cornwall	Redruth.
Wheal Grenville *T*	14 15	15/-	*	—	0 11 3	10,000	Cornwall	37, Walbrook, E.C.
Wheal Kitty.....*T*	7/6 12/6	12/6	*	5/- Oct. '93	17 10 0	6,000	Cornwall	7, Union-court, E.C.
Wheal Metal & F. *T*	—	—	*	3/- Mar. '89	7 9 6	4,295	Cornwall	Truro.
				—	0 13 9	10,784	Cornwall	79¼, Gracechurch-st

NORTH AMERICAN MINES.

Name.	Closing Price, Mar. 2, 1894	Closing Price, Feb. 23, 1894.	Par.	Latest Dividend	Called up per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Almada and T....*S*	-/3 -/9	-/9	2/6	—	0 2 6	351,008	México	6, Queen-street-place
American Belle...*S*	1/- 1/8	1/6	1 0	-/6 Mar. '91	1 0 0	400,000	Colorado	25A, Old Broad-street.
Big Creek	—	—	1 0	1/- Dec. '91	1 0 0	80,038	Nevada	2, Pancras-lane, E.C.
California	—	—	10/-	-/6 May '90	0 8 9	129,571	Colorado	St. George's Ho. E.C.
Canadian Phos. *P*	¾ ⅝	¾	1 0	-/6 Nov.,'90	1 0 0	73,334	Canada	155, Fenchurch-st.
Chiapas	—	—	1 0	—	1 0 0	221,876	Mexico	33, Broad-st. Av. E.C.
Colorado Silver...*S*	—	—	1 0	—	1 0 0	112,491	Colorado	Abchurch-chbrs. E.C
Cortez	—	—	1 0	3 % Feb. '93	1 0 0	300,000	Nevada	Suffolk House, E.C.
De Lamar.....*GS*	22/- 23/-	23/-	1 0	1/- Jan. '94	0 19 9	420,000	Idaho	6, Draper's-gardens.
Dickens Custer*GS*	— -/3	-/3	1 0	—	0 19 9	420,000	Idaho	Winchester Ho. E.C.
Elkhorn .....*S*	9/6 10/6	11/6	1 0	1/- Dec. '93	1 0 0	175,007	Montana	6, Draper's-gardens.
Emma .....*S*	-/3 -/9	-/6	5 0	—	0 5 0	367,788	Utah	15, Geo-st, Mansn. Ho
Flagstaff .....*S*	-/3 -/6	-/6	1 0	—	0 18 3	240,000	Utah	Dashwood Ho., E.C.
Garfield .....*GS*	— —	—	1 0	-/6 Dec. '88	0 19 6	98,185	Nevada	Suffolk House, E.C.
Golden Feather *G*	7/- 7/6	7/6	1 0	—	1 0 0	180,00	California ...	8, Stephens Cs E.C.
Golden Gate.....	-/6 1/-	1/-	1 0	—	0 18 0	79,600	California ...	St. Stephens Cs E.C.
Golden Leaf.....*G*	-/9 1/3	1/3	1 0	—	1 0 0	300,253	Montana	8, Draper's Gardens.
Golden Valley...*G*	3/- 4/-	4/-	1 0	—	1 0 0	55,507	Colorado	15, Angel Court.
Harquahala.....*G*	19/6 20/6	20/-	1 0	—	1 0 0	300,000	Arizona	6, Draper's Gardens.
Ho comb Valley *G*	-/7½ -/10½	-/10½	5 0	—	0 5 0	540,300	California ...	14, Cornhill. E.C.
Idaho.....*GS*	-/7½ -/10½	-/10½	1 0	—	1 0 0	224,967	Idaho	140, Leadenhall-st.
Jackson Goldfields	— —	—	5 0	—	0 5 0	408,635	California ...	8, Drapers' Gardens.
Jay Hawk .....*G*	6/6 7/6	8/-	1 0	-/6 Dec. '92	1 0 0	285,000	Montana	Dashwood House,
Kohinoor "B"*GS*	— —	—	1 0	-/6 June.'81	1 0 0	112,931	Colorado	Bloomfield Ho., E.C.
La Plata.....*S*	-/6 -/9	-/7	5/-	1/3 Oct. '82	0 4 3	405,000	Colorado	11, Poultry, E.C.
Maid of Erin	— —	—	1 0	—	1 0 0	575,000	Colorado	43, Threadneedle-st.
Mammoth Gold	— —	—	1 0	—	1 0 0	400,000	Final Arizona.	257, Winchester Ho.
Mesq. d'l Oro (P) *G*	¾ 1¾	1¾	5 0	—	5 0 0	10,000	Mexico	Dashwood Ho., E.C.
Mesq. d'l Oro (D) *G*	¾ ⅝	⅝	5 0	—	5 0 0	10,000	Mexico	Dashwood Ho., E.C.
Montana	4/9 5/6	6/-	1 0	5% April '91	0 19 0	660,000	Montana	Gresham House, E.C.
New Colorado	— —	—	1 0	—	0 17 0	65,000	Colorado	Abchurch Cham. E.C
N. Consolidated*SC*	— —	—	1 0	—	1 0 0	160,000	Eberhardt, U.S	19A, Coleman-street.
N. Eberhardt.....*S*	— —	—	5/-	—	0 3 6	248,576	Nevada	15, Angel-court, E.C.
N. Gold Hill.....*G*	— —	—	1 0	—	0 19 9	191,045	N. Carolina ...	15, George-st., E.C.
New Guston .....*S*	7/- 8/-	8/-	1 0	1/- Oct. '92	1 0 0	110,000	Colorado	25A, Old Broad-st.
New London	— —	—	2/6	—	0 2 6	327,816	New Carolina	55, Bishopsgt.-st. Wn
N. Hoover Hill...*G*	— —	—	10/-	-/6 Dec. '85	0 10 0	120,000	N. Carolina ...	Langthorne Ho., E.C
Palmarejo .....*GS*	1/6 2/-	2/-	1 0	—	1 0 0	418,888	Mexico	4, Copthall-buildings.
Pinos Altos.....*GS*	— —	—	1 0	-/6 Mar.' 90	1 0 0	300,000	Mexico	110, Cannon-street.
Pittsburg Con. *G*	— —	—	1 0	1/6 Mar. '88	1 0 0	77,147	Nevada	Suffolk House, E.C.
Poorman Con.....	6/- 6/6	6/6	5/-	—	0 5 0	273,948	Idaho	5, Copthall-bldgs. E.C.
Red Mountain ...*S*	— —	—	1 0	—	1 0 0	46,626	Colorado	11, Poultry, E.C.
Richmond ...*GSL*	¾ ½	½	5 0	1/- Sep. '93	5 0 0	54,000	Nevada	44, Coleman-street.
Ruby .....*GSL*	— —	—	5/-	—	0 5 0	221,371	Nevada	22 St. Mary Axe.
Sierra Buttes ...*G*	8/- 10/-	10/-	2 0	-/6 Oct. '93	2 0 0	122,500	California	138, Leadenhall-st.
Do. Plumas Eur. *G*	11/3 13/9	13/9	2 0	-/9 Oct. '93	2 0 0	140,265	California	138, Leadenhall-st.
Springdale.....*G*	2/9 3/3	3/6	$1	—	$1	1,000 000	Colorado	20, Abchurch Lane.
Viola (New).....	— —	—	1 0	—	1 0 0	906,654	Mexico	3, Gt. Winchester st.
				2/6 May, '87	1 0 0	150,000	Idaho	Broad-st. House, E.C.

AUSTRALIAN AND NEW ZEALAND MINES.

Achilles Gld Fld.	1⅞ 1¾	1¾	1 0	—	1 0 0	80,307	New Zealand	3, Church Pas., E.C.
Aladdins Lamp *G*	1⅝ 1¾	1¾	1 0	1/- Feb.'94	1 0 0	100,0 0	N S Wales ...	4-6, Throg. Avenue.
Anglo-Saxon .....*G*	— —	—	1 0	2/- July, '89	1 0 0	51,000	Queensland ..	4, Lombard-court.
Australasian .....*G*	1/9 2/3	2/3	1 0	-/6 Mar., '92	1 0 0	210,000	Queensland ..	6, Queen-st. place
Australian .....*C*	— —	—	20 0	1/6 Aug. '93	7 7 6	18,315	So. Australia	18, Old Jewry Chbrs
Aus. Bro. Hill Con.	1/3 1/9	2/-	1 0	1/- June, '91	1 0 C	540,000	N. S. Wales ..	Shepherds' House.
Blue Spur & G. G.	— —	—	1 0	—	1 0 0	75,926	New Zealand	6, Gt. St. Helens'
Bonnie Dundee *G*	2/6 3/-	2/9	1 0	—	0 17 6	120,000	Queensland ..	3-5 Gracechurch-st
Brilliant Block...*G*	⅜ ½	1	2 0	—	2 0 0	250,000	Queensland ..	2, Gracechurch-st.
Brit. Brok. Hill *S*	2/6 3/6	4/-	5 0	—	5 0 0	240,000	N. S. Wales ..	Abchurch Chambers.
Broken Hill Prop.	2⅝ 2⅝	2⅜ xd	8 0	1/6 Dec. '93	0 8 0	960,000	N. S. Wales ..	Abchurch Chambers.
Carrington.....*G*	2/3 2/9	2/9	12/6	—	0 12 6	100,000	Queensland ..	9, Tokenhouse Yard.
Coromandel .....*G*	— —	—	1 0	—	0 5 0	95,000	India	6-7, Queen-street-pl.
Craven's Cal.	2/6 3/6	4/-	6 0	-/3 Nov. '93	0 4 8	100,000	Queensland ..	30-1, S. Swithin's-la.
Croydon King Blk.	— —	—	5/-	—	0 5 0	60,000	N. Queensland	Leadenhall Big. E.C.
Cumbrind (New)*G*	1/- 2/-	1/3	1 0	2/6 Dec. '87	0 19 0	200,000	Queensland ..	Bloomfield House.
DayDawn B.&W.*G*	4/9 5/3	5/-	1 0	-/6 Mar. 93	1 0 0	498,400	Queensland ..	3-5, Gracechurch-st.
Day Dawn P. C. *G*	4/- 4/6	5/6	1 0	-/6 Apr, '92	1 0 0	490,000	Queensland ..	Winchester Ho., E.C.
Eaglehawk.....*G*	1/- 1/6	1/6	1 0	—	0 18 3	120,000	Victoria.....	31, Lombard-street.
Etheridge .....*G*	— —	—	5 0	—	0 5 0	324,790	Queensland ..	6-7, Queen-street-pl.
Golden Gate.....*G*	— —	—	10/-	—	0 10 0	150,000	Queensland..	9, Tokenhouse Yard
Glenrock .....*G*	2/9 3/3	2/9	1 0	—	0 19 6	225,000	N. Zealand ..	3-5, Queen-st. E.C.
Harrietville .....*G*	— —	—	1 0	-/6 July, '90	1 0 0	146,330	Victoria.....	6-7, Queen-street-pl.
Kaboonga .....*G*	1/6 1/9	1/-	10/-	—	0 10 0	500,000	Queensland ..	30, St. Swithin's-la.
Kangarilla .....*S*	-/9 1/3	1/3	1 0	—	0 18 6	88,275	So. Australia	68, Coleman-street.
Kapanga.....*G*	-/6 1/-	1/-	1 0	-/6 Jan. '91	0 18 9	250,000	N Zealand ..	9, New Broad-street
Kilkivan	— —	—	1 0	—	1 0 0	120,000	Queensland ..	4, Coleman-street.
Midas G. F. .....*G*	— —	—	1 0	—	1 0 0	180,000	Victoria.....	32, Poultry, E.C.
Mills' Day Dawn*G*	1⅝ 1¾	1¾	1 0	-/3 Sep, '93	0 15 9	300,000	Queensland ..	3, Gracechurch-st.
Moruya .....*GS*	— —	—	1 0	—	1 0 0	53,235	N. S. Wales ..	16, St. Helen's-place.
Mosman .....*G*	4/3 4/9	5/-	1 0	-/3 Jan. '94	1 0 0	185,000	Queensland ..	3-5, Gracechurch-st.
Mt. Leyshon .....*G*	1/- 1/6	1/6	1 0	-/6 Dec. '90	1 0 0	157,989	Queensland ..	7, Draper's-gardens.
Mountain Maid *G*	1/6 2/6	2/6	10/-	—	0 6 3	58,010	Queensland ..	Leadenhall Bldgs.
Mt. Morgan Ex. *G*	1¾ 2	2¼	5/-	—	0 2 0	180,000	Queensland ..	4, Tokenhouse Bldgs
Mt. Shamrock *GB*	— —	—	1 0	—	1 0 0	275,000	Queensland ..	13, Basinghall-st E.C
Mount Zeehan.....	-/6 1/-	1/-	1 0	—	1 0 0	193,257	Tasmania	Mansion Ho. Cham.
New Queen .....*G*	9/3 9/9	10/-	1 0	-/6 Oct. '93	0 19 6	158,915	Queensland ..	30, St. Swithin's-la.
Port Phillip .....*G*	— —	—	5 0	—	0 5 0	200,000	Victoria	57, Moorgate-st., E.C.
Queen's Bthdy Un	— —	—	1 0	—	0 10 0	—	Victoria	7-8, Gt. Winchster St.
Queens. Smelting	⅜ ⅜	⅜	1 0	—	1 0 0	38,244	Queensland ..	9, Tokenhouse Yard.
ScottishAustralian	— —	—	1 0	—	1 0 0	200,00	N.S. Wales ..	Winchester Ho. E.C.
Sunburst	— —	—	10/-	-/6 Mar. '92	0 10 0	150,000	Queensland ..	9, Tokenhouse Yard.
Tasmanian Crown	— —	—	1 0	—	1 0 0	175,000	Tasmania	8, Old Jewry, E.C.
Tipperary	— —	—	1 0	—	1 0 0	35,000	N. Zealand ..	3-5, Queen-st. E.C.
True Blue	1/6 2/6	2/6	1 0	—	1 0 0	53,000	Australia	Leadenhall Big. E.C.
Victoria.....	— —	—	1 0	-/5 Dec, '93	1 0 0	144,000	Char. Towers	32, Gresham-st., E.C.
Victory.....*G*	10/- 12/6	12/6	5 0	—	0 5 0	200,000	Queensland ..	32, Gresham-st., E.C.
Waihi.....*G*	20/- 25/-	25/-	1 0	1/- Jan. '94	1 0 0	150,000	New Zealand	11, Abchurch-la. E.C.
Wentworth Ord.*G*	6/- 7/-	6/6	1 0	6/- Jan. '93	1 0 0	500,000	N. S. Wales ...	4-6, Throgmort. Ave

SOUTH AND CENTRAL AMERICAN MINES.

Antio. (Pref.) *G.S.*	—	—	1 0	-/6 Mar. '90	1 0 0	22,458	Colombia	184, Gresham House
Antioquia (ordiny)	—	—	1 0	—	1 0 0	42,453	Colombia	184, Gresham House
Callao Bls.....*G*	-/6 -/9	-/9	1 0	—	1 0 0	320,000	Venezuela ...	50, Old Broad-street.
Camacones.....*C*	⅛	⅛	2 0	—	2 0 0	67,000	Chili	123, Bishopsgt. Wn.
Caratal.....*G*	-/4½ -/7½	-/8	2 6	—	0 2 4	657,326	Venezuela ...	57, Moorgate-st. E.C.
Colon .....*G*	-/9 1/-	1/-	1 0	—	1 0 0	200,000	Colombia	5, Copthall-bldgs. E.C.
Colorado Nit. ...*N*	2¾ 2¾	2½	5 0	7/8 May, '89	5 0 0	32,000	Chili	12, King-st., Liverpl.
Colombian Hy. *G*	16/- 17/-	17/6	1 0	1/- Dec. '93	1 0 0	75,000	Colombia	10, Blomfield-street,
Copiapo .....*C*	1¾ 1⅞	1 13/16	2 0	2/- Dec. '93	2 0 0	100,000	Chili	Dashwood House, E.C
Darien.....	— —	—	1 0	—	1 0 0	71,359	Colombia	Manchester.
Don Pedro.....*G*	9/6 10/6	10/6	1 0	—	1 0 0	133,102	Brazil	24-5, Devonsh. Cs E.C
El Callao .....*G*	16/3 18/9	18/9	5 0	2 fre. Nov.,'90	5 0 0	257,600	Venezuela ...	8, Bishopsgt.-st, Wn.
Frontino & B....*G*	18/- 20/-	19/6	1 0	1/6 Dec. '93	0 19 6	128,662	Colombia	184, Gresham House.
Glenrock .....*G*	2/6 3/-	3/-	1 0	—	1 0 0	199,948	Argen. (& Ind)	3-5, Queen-street, E.C
Glenrock (Pref.)...	— —	—	1 0	—	0 16 0	16,232	Argen. (& Ind)	3-5, Queen-street, E.C
Gravel.....*G*	4/6 5/6	5/6	1 0	—	0 19 0	100,000	Colombia	10, Blomfield-street.
Javali .....*G*	— —	—	2/-	12½ % June'90	0 2 0	105,234	Nicaragua.....	139, Cannon-street.
Julia Nit. .....*N*	2/- 4/-	5/-	5 0	—	5 0 0	22,000	Chili	79¼, Gracechurch-st.
Lautaro .....*N*	2¾ 3¼	3¾	10 0	10/- Sep. '89	10 0 0	25,000	Chili	70, Gracechurch-st.
Liverpool .....*N*	— —	8½	5 0	15/- Aug. '89	5 0 0	22,000	Chili	Liverpool.
Loma .....*G*	— —	1/9	1 0	—	1 0 0	300,000	Colombia	5, Copthall-buildings
London Nit.....*N*	— —	—	5 0	30 % Feb. '89	5 0 0	10,000	Chili	9, Gracechurch-st.
London Nit.(Pref.)	— —	—	5 0	15 % Feb.'89	5 0 0	22,000	Chili	9, Gracechurch-st.
Macate	2/6 3/-	2/6	2/-	—	0 1 0	—	Peru	11, Old Broad-st. E.C
Orita .....*G*	3/- 3/6	3/6	1 0	1/- April '89	1 0 0	30,000	Colombia	10, Blomfield-street.
Ouro Preto ... .*G*	— —	—	1 0	—	0 18 6	80,000	Brazil	6, Queen-street-place
Paniulillo .....*C*	— —	—	2 0	1/- Nov. '89	2 0 0	112,500	Chili	23, Great St. Helens.
Primitiva .....*N*	3⅝ 3⅞	3⅞	5 0	2½ Oct. '89	5 0 0	40,000	Chili	Liverpool.
Quebrada.....*C*	13/16 13/16	13/16	3 0	5% Mar. '92	3 0 0	306,447	Venezuela ...	38, Nicholas Lane.
Rosario .....*N*	3¾ 4¼	4½	5 0	2½ % Oct.'90	5 0 0	80,000	Chili	57¼, Old Broad-street.
Rosario (6% Deb.)	— —	—	100 0	—	100 0 0	849,200	Chili	57¼, Old Broad-street.
St. John del Rey *G*	20/6 21/6	21/3	1 0	10 % June '82	1 0 0	269,932	Brazil	28, Tower-chmbrs, E.C
San Donato ... ...*N*	1⅜ 1⅝	2	5 0	—	5 0 0	32,000	Chili	12, King-st., Liverpl.
San Jorge .....*N*	6 8¼	8¼	5 0	10/- May '92	5 0 0	75,000	Chili	9, Gracechurch-st.
San Pablo .....*N*	3⅞ 4⅛	4⅛	5 0	5% Nov. '89	5 0 0	32,000	Chili	3, Gracechurch-st.
Santa Barbara ...*G*	10/- —	10/-	1 0	1/3 Dec. '88	1 0 0	30,000	Brazil	Liverpool
Santa Luisa .....*A*	— —	—	10 0	10/- Sep. '89	10 0 0	22,000	Chili	70, Gracechurch-st.
Santa Rita .....*N*	2¾ 3¼	2⅝	5 0	3/- Jan., '93	5 0 0	20,000	Chili	Dashwood House, E.C
San Sebastian ...*N*	⅝ 1⅝	1⅛	5 0	10/- Sep. '89	5 0 0	29,000	Chili	Dashwood House, E.C
Segovia .....*G*	— —	—	5 0	—	0 4 0	160,000	Colombia	5, Copthall-buildings
Tetuan .....*G*	— —	—	1 0	—	0 19 6	200,000	Colombia	5, Copthall-buildings
Tolima.....*S*	8 9	9	5 0	10/- Dec. '93	5 0 0	20,000	Colombia	18, Finsbury-circus.
Vic. & Altamira ...	10/-	10/-	1 0	—	1 0 0	200,000	Venezuela ...	Broad-st. Avenue.
W. Argentine ...*G*	— —	—	1 0	—	0 19 0	150,000	Argentine ...	3-5, Queen-street.
West Indian.....*G*	— —	—	5/-	—	0 5 0	700,000	San Domingo	49, Queen Victoria-st.
Zaruma .....*G*	— —	—	5/-	—	0 5 0	261,422	Ecuador..... ..	1, Gt. Winchester-st.

INDIAN AND ASIATIC MINES.

Balaghat Mysore*G*	4/6 5/3	5/6	1 0	—	1 0 0	160,000	India	6-7, Queen-street-pl.
Burma Ruby.....*R*	3/- 4/-	2/-	1 0	—	0 17 0	300,000	Burmah	Suffolk House, E.C.
Champion Reef...*G*	3⅝ 3 11/16	3¾	1 0	—	1 0 0	200,000	India	6-7, Queen-street-pl.
Colar Central ...*G*	-/6 -/9	-/9	1 0	—	1 0 0	200,000	India	Dashwood Ho., E.C.
Coromandel..... *G*	5/16 3/6	3/6	1 0	—	0 12 6	120,000	Ind'a	6-7, Queen-st.-place.
Devala Moyar ...*G*	— —	—	1 0	—	1 0 0	200,000	India	34, Nicholas-lane.
Gemming & Mining	— —	—	2 0	—	1 7 6	24,456	Ceylon	183, Gresham House.
Gold Fids Mysore*G*	25/6 26/6	26/6	1 0	1/- July '92	1 0 0	220,000	India	6-7, Queen-street pl.
Gold Fids Slam *G*	— —	—	1 0	—	1 0 0	150,000	Siam	19, St. Swithin's-lane.
Hyderabad Dec....	— —	—	10 0	—	10 0 0	1,000,000	Deccan	16, St. Helen's-place.
Kempinkote Gd Fd	1/11¼ 1/4	1/6	5 0	—	0 3 0	698,650	India	6-7, Queen-st.-place.
Mysore .....*G*	2 13/16 2 15/16	3¼	1 0	3/- Feb, '94	1 0 0	225,000	India	6-7, Queen-street pl.
Mysore Reefs ...*G*	12/- 13/-	12/-	1 0	—	0 19 6	200,000	India	6-7, Queen-street-pl.
Mysore West ...*G*	3/- 3/6	5/-	1 0	—	0 19 6	130,000	India	Dashwood Ho., E.C.
Mysore Wynaad *G*	1/9 2/3	2/3	1 0	—	1 0 0	250,000	India	Dashwood Ho., E.C.
Nine Reefs .....*G*	1/3 1/9	2/-	10/-	—	0 10 0	250,000	India	6-7, Queen-street-pl.
Nundydroog.....*G*	1⅝ 1⅝	1½	1 0	1/6 Aug. '93	1 0 0	200,000	India	6-7, Queen-street-pl.
Ooregum (Df.O.)*C*	4 13/16 4 15/16	4 15/16	1 0	3/6 Dec. '93	1 0 0	145,000	India	6-7, Queen-street-pl.
Do. (10% Pref.).	5⅜ 5⅞	5¾	1 0	3/6 Dec. 93	1 0 0	120,000	India	6-7, Queen-street-pl.
Pahang Corpn. ...	2/6 3/6	4/-	1 0	15% Apr. '89	0

"THE MINING JOURNAL" SHARE LIST (African Mines continued).

Name.	Closing Price, Mar. 2, 1894.	Closing Price, Feb. 23, 1894.	Par.	Latest Dividend.	Called up Per Share.	Shares Issued.	Situation of Mine.	Head Office.
			£ s.		£ s. d.			
Joe's Luck.....G	2/- 2/6	3/-	1 0	—	1 0 0	57,404	De Kaap	11, Queen Vic.-st.
Jubilee .....G	5⅞ 6	6 1/16	1 0	30% Oct. '93	1 0 0	30,000	Witwatersrdt.	8, Old Jewry.†
Jumpers .....G	3⅜ 4	3¾	1 0	10% Jan. '93	1 0 0	100,000	Witwatersrdt.	29, Holborn Viaduct.]†
Kleinfontein . G	6/- 6/6	6/6	1 0	—	1 0 0	150,000	Witwatersrdt.	8, Old Jewry.
Klerksdorp .... G	— —	—	1 0	—	1 0 0	150 007	Transvaal	110, Cannon-street.
Knight .....G	15/- 17/6	17/6	1 0	—	1 0 0	250,000	Witwatersrdt.	19, Bury-street, E.C.
Langlaagte Est. G	3⅝ 3⅞	3 11/16	3 0	20% July, '92	1 0 0	467,000	Witwatersrdt.	59, Holborn Viaduct.]
Lisbon-Berlyn .. G	2/9 3/3	3/3	2 6	—	0 1 6	883,233	Lydenburg ...	110, Cannon-street.
Lobjaards Vlei Est.	10/3 10/9	10/6	1 0	6% Mar. '90	1 0 0	344,003	Witwatersrdt.	8, Old Jewry.
Main Reef .....G	5/3 5/9	5/9	1 0	—	1 0 0	300,000	Witwatersrdt.	Warnford-court.]
Manica Ophir .....G	— —	—	1 0	—	1 0 0	96,000	Mozambique..	2, Pinner's Court.
May Consol. .....G	9/9 10/3	10/6	1 0	—	1 0 0	430,000	Witwatersrdt.	4, Lothbury.]
May Deep Level G	8/6 9/6	9/-	1 0	—	1 0 0	146,000	Witwatersrdt.	33, Cornhill, E.C.
Metropolitan ... G	13/9 16/3	16/3	1 0	—	1 0 0	75,000	Witwatersrdt.	1, Crosby Square.]
Meyer & Charl....G	5⅜ 5⅝	5¾	1 0	35% July '93	1 0 0	71,687	Witwatersrdt.	Warnford-court.]
Mitchell .....G	— —	—	1 0	—	1 0 0	45,000	Witwatersrdt.	Kimberley.
Modderfontein G	6/8 7/8	7/-	1 0	—	1 0 0	200,000	Witwatersrdt.	Warnford-court.]
Moodies G.&E....G	8/- 9/-	10/8	1 0	-/4 May '90	1 0 0	240,000	De Kaap	8, Old Jewry.]
Moodies (15/- p.)G	4/6 5/6	5/6	1 0	—	0 10 0	120,000	De Kaap	8, Old Jewry.
Namaqua C	15/- 20/-	20/-	2 0	2/6 July '91	2 0 0	194,331	Namaqualand.	34, Leadenhall-bldg.
New Chimes..... G	1¼ 1⅜	1⅜	1 0	—	1 0 0	70,000	Witwatersrdt.	8, Old Jewry, E.C.
New Crœsus..... G	1 5/16 1 7/16	1⅜	1 0	5 % Aug. '92	1 0 0	195,009	Langlaagte ...	4, Bishopsgt.-st, Wt.
New Jagersf. ....G	14¼ 14⅜	14¾	10 0	—	10 0 0	100,000	Transvaal	5, Copthall-buildings
New Primrose ...G	4⅛ 4⅜	4 1/16	1 0	4/- July, '93	1 0 0	230,000	Witwatersrdt.	2, Draper's-gardens.
Nigel .....G	2⅝ 2⅞	2 15/16	1 0	10% Dec. '93	1 0 0	160,000	Witwatersrdt.	1, Crosby-square.
Noitgedacht E. G	— —	—	1 0	—	1 0 0	160,000	Lydenburg ...	8, Old Jewry.
Oceana	2⅛ 2¾	2 15/16	1 0	25/- Nov. '89	1 0 0	150,000	Transvaal	4, Sun Court, E.C.
Ophir Concess. ...	-/9 1/3	1/3	1 0	—	0 18 0	111,857	E. CoastAfrica	31, Lombard-street.
Orange F.S.E. ...D	3¾ 4¼	4	1 0	—	1 0 0	284,000	OrangeF.State	10, Moorgate-street.
Oriental .....G	1/6 2/-	2/-	1 0	—	1 0 0	448,450	De Kaap	Jamaica-bgs.Cornhi l
Otto's Kopje.....D	1/- 1/6	1/6	1 0	—	0 19 3	500,000	Kimberley ...	110, Cannon-st.,E.C.
Paarl Central... G	1 1/16 1	1	1 0	—	1 0 0	138,750	Transvaal	29-30, Hol Via., E.C.
Piggs Peak .....G	-/6	-/9	1 0	—	1 0 0	230,328	Swaziland ...	6, Queen-street-place
Potchefstoom ... G	3/- 4/-	2/6	1 0	—	1 0 0	161,000	Potchefstroom	19, Bury-st., E.C.
Princess Estate G	1 1/16 1 1/16	17/6	1 0	—	1 0 0	72,046	Witwatersrdt.	33, Cornhill, E.C.
Randfontein .....G	12/- 12/6	13/-	1 0	—	1 0 0	1,966,500	Witwatersrdt.	59, Holborn Viaduct.]
Read's Drift .....D	9/- 10/-	10/-	1 0	—	— —	50,000	Transvaal	19, Finsbury circus.
Robinson .....G	5 5 1/16	5	5 0	4% June '93	5 0 0	543,750	Transvaal	55, Holborn Viaduct.][
Roodepoort Un. G	— —	—	1 0	—	1 0 0	100,000	Witwatersrdt.	Warnford-court.]
St. Augustine ...D	-/4½	-/4½	1 0	—	1 0 0	465,000	Griqualand W	30-1, St. Swithin's-la
Salisbury New ...G	2½ 2⅝	2⅜	1 0	—	1 0 0	93,000	Witwatersrdt.	1, Crosby-square.]
Sheba .....G	21/- 22/-	22/-	1 0	-/8 Aug., '93	1 0 0	614,450	Lydenburg ...	18, St. Helen's-place.
Sliati .....G	2/9 3/3	3/3	1 0	—	1 0 0	625,000	Zoutpansberg.	4, Sun Court, E.C.
Simmer & Jack...G	4⅛ 4⅜	4⅛	1 0	10% Nov '93	1 0 0	85,000	Witwatersrdt.	33, Cornhill.
S.A. Gold Trust ...	17/- 18/-	18/-	1 0	10% April '93	0 10 0	220,000	South Africa..	8, Old Jewry.
Spitzkop .....G	1/6 2/-	2/-	1 0	—	1 0 0	144,531	Lydenburg ...	15, Bishopsgt-st, Wt.
Stanhope .....G	17/6 22/6	1¾	1 0	50% May. '93	— —	34,000	Witwatersrdt.	1, Crosby Square.]
Sutherland R. ...G	— —	—	1 0	—	0 17 6	220,000	Zoutpansberg.	3, Budge-row, E.C.
Teutonia... .....G	— —	—	1 0	—	1 0 0	96,000	Witwatersrdt.	8, Old Jewry.
Trans. Coal Trust...	11/6 12/-	12/-	1 0	-/6 Oct, '93	1 0 0	439,965	Witwatersrdt.	Broad-st. House, E.C
Trans. Est. & Dev.	11/6 12/6	11/6	1 0	—	1 0 0	285,700	Transvaal	76, Old Broad-st. E.C.
Trans. Gold ..... G	— —	—	1 0	1/- Dec, '93	1 0 0	250,000	Transvaal	Suffolk House, E.C.
Trans.Land(14/3p)	3/- 4/-	4/-	1 0	—	1 0 0	250,695	Transvaal	33, Cornhill.
Un. Ivy Reef.....G	20/- 22/6	22/6	1 0	—	1 0 0	45,000	Transvaal	110, Cannon-street
Un. Langlaagte ...	12/6 15/-	15/-	1 0	—	1 0 0	100,000	Witwatersrdt.	23, St. Swithin's-la.
Van Ryn ..... G	7/6 10/-	10/-	1 0	—	1 0 0	99,810	Witwatersrdt.	1, Crosby-square.]
Victory Hill .....G	— —	—	1 0	—	1 0 0	108,000	De Kaap	Portland House, E.C.
Village Main Reef	4¼ 4½	4½	1 0	—	1 0 0	132,000	Witwatersrdt.	8, Old Jewry.
Virginia.....G	— —	—	1 0	—	1 0 0	48,335	Transvaal	26, Budge-row, E.C
Vogelstruis .....G	— —	—	1 0	—	1 0 0	150,000	Witwatersrdt.	34, Leadenhall-bldgs.
Wemmer .....G	4⅝ 4⅞	4¾	1 0	10% Nov. '91	1 0 0	55,000	Witwatersrdt.	19, Bury-street.][†
Witwatersrandt ...	— —	—	1 0	—	1 0 0	250,000	Witwatersrdt.	19, Bury-st., E.C.
Wolhuter .....G	2¾ 2⅞	2¾	1 0	—	1 0 0	120,000	Witwatersrdt.	Warnford-court.†
Worcester .....G	1⅝ 1⅞	2	1 0	—	1 0 0	90,727	Witwatersrdt.	8, Old Jewry.]
Zwartland Land ...	— —	—	1 0	—	0 16 0	150,000	Transvaal	19, Birchin-lane, E.C

METAL TRADE STATISTICS.

FEBRUARY, 1894.

COPPER.

(From Messrs Henry R. Merton and Co.'s Circular for February, 1894.)

	Feb. 28, 1894.	Feb. 15, 1894.	Jan. 31, 1894.	28TH FEBRUARY. 1893.	1892.	1891.
STOCKS IN ENGLAND AND FRANCE:—	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
Liverpool and Swansea, Chili Bars	30,353	30,434	29,927	31,275	27,902	16,501
,, ,, Chili Ingots	556	456	456	59	320	235
,, ,, Chili Ores and Regulus (fine) ...	312	294	385	264	627	192
,, ,, Other Stuff (fine) & English Copper	4,787	4,866	5,567	7,739	9,146	12,544
London (including landing)	5,366	5,004	5,078	7,786	8,717	7,774
Stocks of fine Copper in Havre, Rouen, Bordeaux and Dunkirk	2,390	2,394	2,239	6,317	6,619	20,185
	43,764	43,448	43,652	52,920	53,331	57,431
ADVISED FROM CHILI by Mail and Cable, Fine Copper ...	2,850	2,850	2,700	3,900	2,750	3,101
,, ,, Australia, by Mail and Cable, Fine Copper	750	850	800	600	700	950
	47,364	47,148	47,152	57,420	56,781	61,481
Price of Chili Bars and G.M.B.'s per ton	£41 0 0	£41 5 0	£41 5 0	£45 12 6	£44 5 0	£5 15 0

COMPARATIVE STATEMENT.

—	Stock in England and France and Afloat thereto from Chili and Australia.	Price of G.M.B.	Arrivals: England and France.	Arrivals: Other European Ports.	Arrivals: England & France from Spain and Portugal (excluding Pyrites).	Arrivals: England & France from Other Countries.	Charters from Chili to Europe.	Shipments from Australia to London.	Total Suppl's.	Total Deliveries. †
			From N. America.							
Month ending	Tons.		Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.	Tons.
28th February ... 1894	47,364	£41 0 0	3,198	3,276	647	764	1,950	550	10,385	10,173
31st January ... ,,	47,152	41 5 0	4,921	2,809	1,477	890	1,350	500	11,947	12,090
31st December ... 1893	47,295	42 15 0	3,848	4,252	1,687	852	2,700	500	14,439	13,371
30th November ,,	46,827	43 0 0	6,146	4,388	1,332	5,684	1,400	450	19,400	20,613
31st October ..... ,,	48,040	42 2 6	7,097	6,275	999	3,082	2,200	1,000	20,653	20,517
30th September ,,	47,904	41 17 6	7,940	3,971	1,255	62	1,700	600	16,087	16,144
31st August ..... ,,	47,961	41 12 6	4,272	2,588	1,535	645	1,500	400	10,940	13,462
31st July ..... ,,	50,493	41 12 6	4,236	2,412	614	2,607	2,400	400	12,669	12,141
30th June ..... ,,	49,955	43 10 0	1,914	2,310	1,958	2,545	1,850	550	11,130	11,126
31st May ..... ,,	49,951	43 2 6	3,179	907	1,291	1,271	1,750	450	8,928	11,071
30th April ..... ,,	52,094	44 10 0	2,521	905	799	1,084	1,600	550	7,459	10,636
31st March ..... ,,	55,271	45 5 0	1,312	687	1,577	3,291	680	600	8,447	10,566
			50,584	34,860	15,471	23,339	21,050	6,550	151,884	161,913
28th February ... 1893	57,420	45 12 6	1,821	632	1,170	2,785	3,000	450	9,85	10,945
31st January ... ,,	56,507	45 2 6	3,266	455	1,452	4,899	1,000	700	11,772	9,011
31st December ... 1892	55,745	46 17 6	3,235	542	2,555	3,006	2,600	300	12,238	9,391
30th November ,,	53,498	47 17 6	2,8.2	643	690	1,725	1,500	700	8,06	10,640
31st October... ... ,,	56,078	45 12 6	752	850	762	2,922	1,650	500	7,436	9,840
30th September ,,	58,482	44 2 6	1,048	535	1,619	2,315	1,750	400	7,667	8,9.3
31st August ... ... ,,	59,718	44 7 6	2,887	324	965	2,583	1,900	400	9,05	9,079
31st July ..... ,,	59,738	44 17 6	2,893	390	2,146	3,744	2,200	650	12,023	8,89
30th June ..... ,,	56,604	44 17 6	2,909	416	2,345	4,745	1,60.	300	12,3.5	9, 76
31st May ..... ,,	53,965	46 7 6	2,841	661	2,288	1,215	2,150	500	9,6.8	9,521
30th April ..... ,,	53,828	45 12 6	1,968	1,294	2,422	2,968	1,50	100	10,24	10,725
31st March ..... ,,	54,311	46 5 0	2,260	1,667	2,012	2,013	1,750	300	10,002	12,472
			28,702	8,382	20,427	34,9.0	22,600	5,30.	120,331	119,692
29th February ... 1892	56,781	44 5 0	2,262	495	1,724	1,277	2,000	300	8,058	8,739
31st January..... ,,	57,462	44 12 6	2,809	893	750	1,571	1,525	350	7,898	6,480
31st December ... 1891	56,044	46 15 0	1,720	1,57.	2,049	3,305	1,200	600	10,449	12,0.5
30th November ,,	57,620	44 12 6	2,007	1,417	672	1,825	2, 50	400	10,571	10,766
31st October..... ,,	59,815	46 5 0	1,427	1,244	1,734	4,893	900	800	10,998	10, 33
30th September ,,	59,480	51 2 6	3,045	1 9	2,181	1,975	2,9.0	700	11,780	11,9.9
31st August ..... ,,	59,619	52 10 0	3,8.5	1,5.3	1,436	2,262	2,300	350	11,746	9,899
31st July ..... ,,	57,782	52 0 0	3,983	489	1,336	1,656	1,400	700	9, 64	9 107
30th June ..... ,,	57,325	55 5 0	2,515	1,510	3,358	3,25.	1,400	500	12,5.6	13,469
31st May ..... ,,	58,258	55 5 0	2,646	1,870	2,021	3,805	1,250	400	11,992	13,05.
30th April ..... ,,	59,316	51 12 6	3,847	7.6	2,208	1,722	1,750	800	11,083	12,020
31st March ..... ,,	60,252	53 2 6	3,685	1,806	1,737	1,112	1,8.0	400	10,540	11,768
			33,751	14,277	21,406	28,656	20,525	6,300	125,215	129,915

† Including Chilian and North American for all Europe.

TIN.

(From Messrs. A. Strauss and Co.'s Circular for February, 1894).

	31st January, 1894.	28th February, 1894.	28th February, 1893.	28th February, 1892.
	Tons.	Tons.	Tons.	Tons.
Straits and Australian spot	5,372	5,239	3,117	2,684
Ditto ditto landing	1,175	1,105	1,233	500
Straits, afloat	2,990	3,515	3,135	2,195
Australian, afloat	681	570	550	780
Banca, on Warrants.....	10,218	10,429	8,035	6,159
Billiton, spot	1,056	427	680	484
Ditto afloat.....	619	525	539	548
	1,262	1,948	1,012	1,550
	13,161	13,329	10,266	8,941
Total afloat for United States	825	915	2,650	2,100
Estimated stock in America.....	475	400	3,415	1,205
Total	14,461	14,644	16,331	12,146
Prices of Straits and Australian	£71 0 0	£85 15 0	£92 5 0	£89 5 0
Deliveries during the month in London.....	1,768	1,791	1,284	1,303
Ditto ditto Holland.....	450	765	697	809
	2,218	2,556	2,081	2,112

Shipments during the month from Straits to London ... ... 2,450 Tons
,, ,, ,, Australia to London ... ... 300 ,,
,, ,, ,, London, Havre, and Holland to America ... 420 ,,
,, ,, ,, Straits to America ... ... 350 ,,
,, ,, ,, Australia to America ... ... 50 ,,
,, ,, ,, Straits to Continent ... ... 1,400 ,,

—	During 12 months ending Feb. 28, 1894.	During 12 months ending Feb. 28, 1893.	During 12 months ending Feb. 28, 1892.	During 12 months ending Feb. 28, 1891.	During 12 months ending Feb. 28, 1890.
Shipments from Straits to London	26,760	20,633	17,548	13,279	17,663
Shipments from Straits to America	3,500	9,960	8,682	9,245	7,265
Shipments from Straits to Continent	11,088	5,155	4,700	4,640	3,835
Ditto from Straits to Europe and America ...	41,348	35,748	30,930	27,144	28,763
Shipments from Australia to London	4,497	4,438	4,432	5,018	5,569
Shipments from Australia to America... ...	300	700	800	805	809
Deliveries of Tin in London	19,972	14,0.9	16,969	16,342	18,382
Deliveries of Tin in London and Holland ...	27,702	22,373	24,998	24,325	25,944
Ditto in London, Holland, France, and U.S....	37,575	45,627	46,725	44,145	44,179

Banca in Trading Company's hands and afloat, 4747 tons.

PRICES; Straits and Australian, spot ... ... £85 15 0 three months ... £86 15 0
English Common ingots ... ... 71 10 0 refined 73 10 0
Banca ... ... 71 15 0 Billiton 67 0 0

REPORTS UPON MINERALS, TRADE, &c.

COPPER.

MESSRS JAMES LEWIS and SON'S mid-monthly report on copper, dated Liverpool, February 16, 1894, says:—There has practically been no change in the value of good merchantable copper during the past fortnight. Opening at £41 5s. per ton for cash, values gradually fell away, under the influence of a further decline in silver, until £40 17s. 6d. was reached on the 9th instant. From this point there was a reaction to £41 5s. on the 14th, of which 2s. 6d. was lost next day, the closing value to-day being £41 2s. 9d. for cash, and £41 17s. 6d. for three months' prompt. In consequence of the low comparative price of English tough and best selected copper, due to American competition, a considerable reduction has had to be accepted for furnace material. The returns made by European and American producers are as follows:—

	January, 1894.	Previous 6 Months.
European Production ..... Tons	8,110	49,691
American Production..... ,,	10,832	67,29.
do. Imports ..... ,,	1,340	6,252
do. Exports ..... ,,	7,717	60,0.6

For the fortnight ending the 10th inst. the exports were only 3100 tons. Lake copper is quoted dull at 9.75 cents per lb. in New York, or about 50 cents above the price at which it can be sold for export to Europe. American consumers naturally object to pay more for the copper they require than what European consumers pay for American copper. A further fall to about 9.25 cents per lb. seems therefore probable unless prices here improve. American mine owners are now beginning to realise the effect of the excessive production of refined copper in the United States, and consequent low prices resulting from the endeavour to sell this copper by numerous refiners in retail quantities a policy that constantly and steadily tends to depress and lower the level of values. The export of copper from Japan is returned as 14,320 tons in 1893, 15,249 tons in 1892, 16,575 tons in 1891, 18,096 tons in 1890. Stocks have decreased 295 tons and the visible supply 167 tons during the past fortnight. Imports to date are 1340 tons and deliveries 773 tons less than last year. The arrivals in England and France for the fortnight have been 3167 tons and the deliveries 3372 tons. The arrivals of Chile in Liverpool and Swansea have been 397 tons and the deliveries 481, and from other countries 1400 and 2101 tons fine respectively. The arrivals here and in Swansea from the United States have been 633 tons bars, 418 tons ingots, and 25 tons matte, equal to about 1034 tons fine. We have no return from France. The Chile Charters for the past fortnight are advised as 1160 tons and exchange is 12 5/16d.

Messrs. HARRINGTON and Co's Copper report, dated Liverpool, February 16, says:—Chili Charters for the past fortnight are cabled as 1100 tons, making the total since December 31 last 2450 tons, against 3000 tons same time last year. Exchange 12 5/16d. During the past fortnight about 6500 tons of g.o.b's and g.m.b's have been sold, and the fluctuations in values have been very insignificant, the highest price being £41 6s. 3d. cash, and £41 16s. 3d. three months, the lowest £40 17s. 6d. and £41 7s. 6d respectively, principally caused by the fall and rise in silver. To-day the tone was firmer, and we closed with buyers at £41 7s. 6d. cash and £41 17s. 6d. three months. Sales of furnace material have been moderate, and low prices accepted; for suitable descriptions there is a fair demand, but these of late have been scarce. The copper market has now for some time suffered from the quantities of refined American copper which was being offered to consumers out of second hands.

The following are the returns of the Copper Producers' Committee:—

	January.	Seven months.	Maximum allowed for seven months, under the old agreement.
	Tons.	Tons.	Tons.
European Production	8,110 ...	48,827 ...	49,595
American ,, ...	10,832 ...	78,142 ...	75,043
,, from Pyrites, &c.....	1,340 ...	7,592 ...	6,464
Total	20,282 ...	134,541 ...	131,102
American Exports	7,717 ...	67,743 ...	23,331

THE DIAMOND MARKET.

M. LUDWIG J. LIPPERT'S circular on the diamond market, dated Hamburg, February 24th, says: since my last report of 6th inst, transactions in De Beers were small, and prices moved between £14¾ and 15 1/16, the extreme limits sometimes being touched on the same day. The future of the De Beers market depends on the decision of the United States Senate about the tariff, which may be delayed for a long while yet, but still more on the entire position of trade and finance in the United States, which absorb one-third of the De Beers production. To the present report is annexed a graphic description of the fluctuations of De Beers from the beginning of 1888. 1888 opened at £13¾ rose almost uninterruptedly to £.4½, then fell to £12⅜, and after many fluctuations closed at £15. 1889 opened at once £1 higher, rose up to £23¾, and closed at £23. 1890 opened at almost the same price, fell to £15¾, rose to £20, declined to £18, and closed at £18¾. 1891 began at the same price, falling under small fluctuations to £11 successively and closed at £ 5¾. 1892 opened at £15, fell with but small fluctuations several times to £13¾, rose almost uninterruptedly to £.8¾, and closed at £17¾. 1893 opened at £17¼; prices rapidly rose to £21, fell almost without any fluctuations and partly with rapid declines to £14¾, and then rose slowly, but almost uninterruptedly to £18¾. Statistics will almost prove anything, the same figures serving for two conclusions diametrically opposed to each other, it all depends how they are grouped. Therefore I limit my remarks to conclusions, the correctness of which I believe will be disputed by nobody. I will leave out of consideration the years 1888 and 1889. These were the years when those amalgamations were perfected, out of which rose the present proud structure of the De Beers Company. All the expectations dependent thereon realised or disappointed, influence the price, movements being intensified by the high fever of speculations then prevalent. But the other years up to the present date were a series of prosperity for the De Beers Company never interrupted. If we nevertheless see fluctuations of such magnitude in their price it proves clearly that also this undertaking, most solid and belonging to the best funded in the world, is dependent in its public estimation upon the general position of trade and finance and very sensible to every change therein. It also points the lesson for the future of the market. We can only expect a higher valuation of its shares in public estimation simultaneous with an improvement in the general position. First Debentures are quoted 104½ to 105, Second Debentures are quoted 104½ to 105, Bultfontein Obligations are quoted 99½ to 99⅝, Griquas were offered at £03¾ ex div. Consolidated were 25s. 3d. buyers for small parcels, 25s. 6d. has been paid. At the present low rate for money and the great demand for first class securities I do not doubt that they will maintain a rising tendency. Robinsons were much in demand, £4⅜ ex div. being paid yesterday. It has transpired that the board at Johannesburg contemplates the erection of 60 new stamps partly for more vigorous treatment of the work performed on the old reefs, and partly because assays of the main reef have shown payable ground in different sections. In some quarters an important increase of dividend is expected herefrom for the present year already. It matters little whether this expectation will be realised or not, time and cost of the new installation being against an important rise in dividends for this year already. In either case it shows well for the capabilities of this company, and this will no doubt soon find its expression in a rise in the price of its shares. Geldenhuis are well held and steady with a tendency for a rise at £4¼. Henry Nourse moving in the same direction at £2¼.

THE DIRECTORY OF DIRECTORS.—Mr. Thomas Skinner, whose name instantly recalls to mind the well-known and authoritative "Stock Exchange Year Book," has just issued his 1894 edition of the "Directory of Directors." The title of the work is quite a sufficient indication of its scope and purpose. Obscure, indeed, must be the company whose directors are not entered in the roll. All who are connected with companies will find it highly convenient to have the book upon their shelves.

GOLD FROM SOUTH AFRICA.—The Union Steamship Company's R.M.S. *Scot*, which arrived at Plymouth at 10.40 a.m., on Thursday, from South Africa, brought native gold to the value of £262,928. This is the largest consignment yet brought by any vessel from South Africa. The *Scot* made her passage from Cape Town to Plymouth in 14 days 9 hours not steaming time.

REPORTS FROM THE MINES.

We find it necessary to announce that, owing to the vast numbers of mining reports, and items of mining intelligence which reach us invariably very late—up to, and frequently after the time of going to press—it is impossible to guarantee the insertion of all of them in the issue in which, in ordinary course they should appear. We always endeavour, however, to make this important feature as complete as possible, and if the secretaries of mining companies, mining captains, and others would kindly make an effort to let their reports, etc., reach us early on Fridays, when it is not possible to let us have them earlier in the week, their doing so would go far to ensure their insertion, and to promote the completeness of our Mining Intelligence.

BRITISH MINES.

DEVON GREAT CONSOLS.—William Clemo, March 1: Watson's engine shaft: In the 172 fathom level east the lode is yielding a little saving work of copper and mundic ores. The 160 fathom level east is producing 2 tons of copper and mundic ores per fathom. The lode in the 148 east has improved and is very promising; it is now yielding 6 tons of copper and mundic ores per fathom. All other workings are progressing satisfactorily.

DRAKEWALLS.—J. Hosking, T. Chapman, March 1: We are again in fork at the bottom level (175 fathoms), but otherwise there is little change to notice since last report.

GREEN HURTH.—February 16: Ore in stock January 19th 10 tons 8 cwts.; ore raised for month, 23 tons; total, 33 tons 8 cwts. Ore delivered 11 tons 4 cwts.; ore in stock, 22 tons 4 cwts.—Annie's Vein: I am pleased to report a further improvement for lead at the south forehead, now worth 3 tons per fathom. This is carrying good in the roof about 4 feet above the level, where we meet with a plate bed cutting of the vein. A heading has been commenced on this, which is also worth 3 tons per fathom. The drivage from the sump on the above vein is not so rich as previously reported, worth at present 2 tons per fathom. In south west branch above 30 level the vein at south end is still turning to the east, and has considerably reduced in value, worth to-day 1¼ ton per fathom. A fortnight ago this vein was bearing west from No. 1 cross vein, which led me to think this might be a separate vein, but seeing that it is now turning quickly eastward I am convinced that it is only part of No. 1 cross vein. The north end continues poor, but are just at a point where we expect to intersect another branch coming in from the north west. This was worked formerly in the adit level above. Another week's work should prove this point.

— February 23rd: There is no material change to note in any of our workings this week. The south forehead on Annie's vein continues to look healthy also the heading above, each worth 3 tons per fathom. The drivage from the sump north maintains its value, worth 2 tons per fathom. South west branch above 30 level the south end is worth 1½ ton per fathom. The north end is poor. I estimate we shall raise 11 tons of ore this week.—W. Gray.

LEADHILLS.—G. Menzies, February 27: Brown's Vein: The ten men in the 130 south of Jeffrey's shaft are put to draw the accumulated water out of the new lift of sinking on shifts. Seven to drive the 160 fathom level, now 5 fathoms 1 foot north of Wilson's shaft, at 100s. per fathom; vein above 4 feet wide, well mixed with spar, but the stone is just rather hard and dried for yielding ore. Five to sink winze below the 145 north of Wilson's shaft at 95s. per fathom; vein above 4 feet wide, charged with nice-looking spar and ore, worth 30 cwts. per fathom. Two to stope above the 145 north of Jeffrey's shaft at 40s. per fathom, worth 35 cwts. of ore per fathom. Two to stope above the 130 north of Jeffrey's shaft at 47s. 6d. per fathom, worth 25 cwts. of ore per fathom. Two to drive the 115 fathom level, now 118 fathoms 5 feet 6 inches north of Jeffrey's shaft, at 105s. per fathom; vein above 4 feet wide, mostly spar of a very kindly nature, but without ore. Two to rise above the 115 north of Jeffrey's shaft at 100s. per fathom, worth 35 cwts. of ore per fathom. Five to clean out No. 2 stope above the 115 north of Jeffrey's shaft on shifts. Five to No. 3 stope at 42s. 6d. per fathom, worth 40 cwts. of ore per fathom. Four to drive the 115 fathom level, now 54 fathoms 2 feet south of Wilson's shaft at 70s. per fathom; vein above 4 feet wide, almost wholly stone, too dark and dried for yielding ore. Five to drive the 100 now 102 fathoms 5 feet north of Jeffrey's shaft at 105s. per fathom; vein above 4 feet wide, showing kindly stone well mixed with spar but without ore. Two to sink below the 100 north of Jeffrey's shaft at 100s. per fathom, worth 30 cwts. of ore per fathom. Five to drive the 100 fathom level, now 114 fathoms 0 feet 6 inches south of Wilson's shaft, at 80s. per fathom; vein above 4 feet wide, charged with kindly spar and spots of ore, not however to value. Ten to the winze, now 8 fathoms below the 85, south of Wilson's shaft at 120s. per fathom; vein above 4 feet wide, charged with encouraging spar and ore, worth 80 cwts. per fathom. Seven to No. 1 stope above the 85 south of Wilson's shaft at 40s. per fathom, worth 100 cwts. of ore per fathom. Two to No. 2 stope at 30s. per fathom, worth 35 cwts. of ore per fathom. Five to No. 2 winze below the 70 south of Wilson's shaft at 90s. per fathom; vein above 4 feet wide, showing kindly stone with a nice mixture of spar, but only occasional spots of ore. Four to drive above the 50 south of winze at 70s. per fathom, worth 50 cwts. of ore per fathom. Four to stope below the 35 south of flat rod shaft at 45s. per fathom, worth 80 cwts. of ore per fathom. Five to stope above the 35 south of flat rod shaft at 40s. per fathom, worth 30 cwts. of ore per fathom.—Sarrowcole vein: Three to drive Gripp's adit, now 67 fathoms 3 feet south of George's Roust vein, at 95s. per fathom; vein 3 feet wide, showing a nice mixture of spar, but without ore.

POLBERRO.—February 26: The 26 east on Pink lode is unchanged since the meeting. It yields about 16 lbs. tin per ton and some fine stones of copper ore. The lode in the 26 west is disordered by a small crossing at present, but we expect the lode to resume its character and value on getting away from the influence of this crossing. The general appearance in the end of the 26 crosscut north indicates that we are approaching the South House lode. The branches are more frequent than they have been, and they yield good stones of both tin and copper ore. The 20 west on the junction of Pink and Callow lodes has been driven 10 fathoms from the winze, We have set this end to drive a further 12 fathoms at £5 10s. per fathom. The end produces a little tin.—(Signed) Charles Thomas, John Harper.

PRINCE OF WALES.—T. Roberts, March 1: We think there are indications in the cross cut showing a near approach to the lode. Very hard capel, spar, and mundic, with water issuing from it.

SOUTH CONDURROW.—Wm. Rich, Wm. Thomas, Fred Rich, February 28: There is very little ateration in the ends at Marshall's shaft since our report of last week. The 153 end west on the flat lode is looking better, and is yielding fine stones of tin.

WEARDALE LEAD.—Report on Weardale Company's Mines for week ending 24th February: Groverake: Slate sill drift west vein more sparry, and looks better for ore, worth 10 cwts. per fathom. Adamson's drift west vein looks better for ore, worth 14 cwts. per fathom. Rise to 30 fathom level from Rowell's old ground now holed, and men now driving Firestone drift west. In the 60 fathom east men driving level forehead again, as the cross cut has been driven to the stone and nothing better found. Groverake cubic fathom stopes worth 10, 12, 16, 22, 12, 14, 12, 14, 14, 12, and 12 cwts. per fathom.—Boltsburn: Cross cut south from Watt's level shows indications of flatts, a little spar, and ore, very wet, and slow to drive. Foster's cross cut north still flatty looking, small cavities, with a little spar and some ore, but not to save. Stopes worth 28, 30, 34, 24, 34, 22, and 32 cwts. per fathom.—Greenlaw's: Watson's drift in plate under 6 fathoms hazel worth 14 cwts. per fathom. Nattrass Gill drift end nipped. We have found some vein off to the north. Stopes worth 12, 18, 16, 16, 16, 26, 20, 20, 30, and 24 cwts. per fathom. The rise in plate to prove quarry hazel shows no change. Lowe's drift, vein improving, composed of spar, ore, and rider. Lee's sump, the drift shows a strong sparry vein, worth 12 cwts. per fathom. Killhope stopes worth 18, 14, 14, 12, 14, and 14 cwts. per fathom.—Craig's level, Grovehead flatts worth 16 cwts. per fathom. Sedling: The 56 level is now opened 97½ fathoms east from drawing shaft; air bad. The crosscut north from bottom of shaft in the scar limestone is driven 7½ fathoms. We have a strong flatt composed of hard rider, quartz, fluor spar, and a little ore. The 64 level east has been driven 26 3-6 fathoms. End worth 14 cwts. per per fathom. Stopes east and west of this shaft at this level worth 14, 12, 14, 18, 16, 16, and 12 cwts. per fathom. South vein, Stobb's drift east, stope worth 12 cwts. per fathom. Ore raised for week 96 tons. Ore dressed for week 90 tons. Ore, slag, and fume smelted for week 119 tons, producing 62 tons of pig lead.

WHEAL KITTY.—William Teague, John Dunn, Charles Cole, February 2: In the 204 fathom level driving east of new shaft, the lode is producing some very good stones of tin. In the 194 fathom level driving east of new shaft, the lode is worth for tin £7 per fathom. In the 172 fathom level driving east of new shaft, we have intersected the crosscourse, the lode has a very kindly appearance, and worth for tin £8 per fathom. In the 60 fathom level driving east of crosscut, and south of the slide on Joe's lode, we are making good progress. The lode at present is 4 feet wide, with an underlie of 8 feet in 6; and letting out a quantity of water, and producing some very good work for tin; and with anything like a fair price for tin, would leave a good margin of profit for working. In the 60 fathom level driving east of crosscut and south of Joe's lode, referred to above, about 8 fathoms, we have a very kindly lode producing some very good stones of tin, with a very regular wall and an underlie of 18 feet in 6. Many are of the opinion there is yet a better lode standing to the south; this we shall be able to prove later on, after we have opened on the present part, which is to-day letting out more water. The men are also making good speed in driving this end. Our returns have been seriously interfered with for the want of coal, but we hope the worst is over, and we shall now get a regular supply.

COLONIAL, INDIAN, AND FOREIGN MINES.

ELKHORN.—Copy of Mr. C. A. Molson's monthly report for January:—Mine: Ore breaking department: 650 feet level south, back stope: Connection has been made here with the south end raise. The vein is two feet wide and assays 30 ounces. No. 2 stope: The vein is 30 inches wide, and assays 45 ounces and 6 per cent. lead. In the old workings above this stope we are breaking porphyry ore assaying 35 ounces. The streak is 2 feet thick,—750 feet level north, cross cut raise stope: The vein is 4 feet 6 inches wide, and the value 35 ounces. The ore is mostly dry, although a few small bunches of lead occur next the footwall.—Inside stope: The vein is improving in size and value, the average assays for 8 feet of ore being 31 ounces.—850 feet level north new stope: The vein is 4 feet 6 inches wide, and the value 40 ounces. Carbonate ore, with some bunches of rich sulphide, is showing in the back of the stope.—950 feet level north: The vein is 6 feet wide, and the value from 35 to 40 ounces. At the north end of the stope some porphyry and lead is coming in.—1050 feet level south, back stope: The vein is 6 feet wide, and the average value 48 ounces. On the hanging wall side there is a band of smelting ore 18 inches wide, assaying 75 ounces and 12 per cent. lead. North of the shaft, outside stope; The vein is 3 feet 6 inches wide, and the value 33 ounces. Raise stope: The vein is 30 inches wide, and the value 35 ounces. 1150 feet level south, end stope: The vein is 2 feet wide, and the value 30 ounces. 1250 feet level north: A stope has been started at the top of the raise to the 1150 feet level. The ore is partly milling and partly smelting. The value for an average width of 3 feet is 37 ounces and 4 per cent. lead. 1350 feet level south, main stope: The vein is 12 feet wide, and the average value 40 ounces. Footwall lead chamber: The ore is 30 inches wide, and assays 200 ounces and 12 per cent. lead. The dry silicious ore occurring with the lead ore assays 140 ounces. The width is 20 inches. South end raise: The vein in the back is 5 feet wide and assays 60 ounces and 7 per cent. lead. 1450 feet level south, main stope: The vein is 5 feet wide, and assays 75 to 80 ounces and 8 per cent. lead. South end: The vein is 2 feet 6 inches wide, and assays 35 ounces. The ore here is still of the same dry character. North of the shaft, top of raise: The vein is 2 feet 6 inches wide and assays 40 ounces. The ore is now dry.—1550 feet level south, main stope: The vein is 2 feet wide, and the value 80 ounces and 10 per cent. lead.—North of the shaft: At the top of the raise, just below the 1450 feet north stope, the vein is 3 feet wide, and the value 45 ounces.—Prospecting department: 1150 feet south: A prospect raise has been started on the footwall lead streak at the north end of the main stope. It is up 8 feet.—North of the shaft: The drift was extended 8 feet 5 inches to prove the end of the ore chute.—1550 feet south raise: An intermediate drift was started northerly from the centre of the raise. It is now in 9 feet.—Main shaft: Previously reported, 52 feet; advanced in January, 66 feet. Total depth below 1550 feet level, 118 feet. The station for the 1650 feet level was cut at a point 101 feet below the 1550 feet level. It has been timbered and the tank pit cut out ready for the next lift. The levels are started, the north drift being in 3 feet and the south drift 13 feet 6 inches. Work here is being pushed ahead steadily. The contact and character of the ground generally is the same as that met with on the level above. (The north drift is in to date 26 feet and the south drift 61 feet.)—Amount and source of ore hoisted: 650 level 21 cars, 750 level 181 cars, 850 level 112 cars, 950 level 308 cars, 1050 level 195 cars, 1150 level 56 cars, 1250 level 131 cars, 1350 level 352 cars, 1450 level 497 cars, 1550 level 226 cars; total, 2079 cars. Number of tons, 1225.—Milling Department: The mill made a steady run during the month. The percentage of salt used in the roasting of the ore was increased to 15 per cent., and the results were satisfactory in giving a higher percentage of saving. The machinery is all working well.—Table of work performed in January: Ore on hand January 1st, 1894, 60 tons; raised from the mine, 1225 tons; less smelting ore, 210 tons; waste sorted out, 149 tons, 359 tons, 865 tons; add for salt, 205 tons; dry ore panned, 1070 tons; pulp in the mill, 17 tons; rough ore in stock, 44 tons; 1131 tons; 1131 tons. Table of mill work: Dry ore panned 1070 tons, average assay value 35 ounces, average per cent. salt used 15 per cent., average value of tailings 3 ounces, average per cent. saved 91 per cent., number of Doré bars produced 39 bars, number of ounces fine silver 36,336 ounces, number of ounces fine gold 23 ounces, batteries in service 29 days, pans in service 30 days, estimated value of bullion shipped $24,650, actual returns for ore shipped $12,902 ($37,552), current expenses, including salaries, labour and supplies $24,590; balance, being profit for January, 1894 (or at $4·85 to £ sterling, £2672), 12,962.—Surface department: Water supply: Owing to the protracted cold weather the surface supply of water is short, and we have had to use mine water in part in the mill.—Fuel: The supply is coming into the yards in greater quantity. The usual routine work is all that is being done on the surface.

JAY HAWK AND LONE PINE.—J. Prideaux, February 8: Since my last report the shaft has been sunk 28 feet; the ledge is looking well. The north drift has been driven 15 feet; the ledge is 10 feet, good ore and 6 feet low grade ore; the ledge is altogether 16 feet wide, as we have to take out all the ore to work the mine in a proper manner, and it is much cheaper to take all the ore out as we go, because the ground has to be well timbered; but, of course, this reduces the grade of the ore in the battery, but it cannot be helped at present. The winze from the 1300 feet level has been sunk 35 feet, and is in very good ore. The stopes above the 1300 are about the same as last reported. The ledge in the Excelsior shaft is looking better. The ledge in the Bonanza shaft is 8 feet wide, and is improving in value as it goes down. The mill is working well, and also all the machinery.

KAPANGA.—W. H. Argall, January 16: I beg to hand you the following report for the four weeks ending 13th inst. During the month we have put in new penthouse in the engine shaft, also made the necessary arrangements for sinking same, and have sunk 3 feet, making total depth 611 feet. To expedite the sinking of the shaft rock drills will be used. We have put in new loadings and erected engine with air compressor and air receiver; the necessary pipes are being put in order, and we hope to have the same in full swing in the course of a few days. The shaftmen during a portion of the month sunk the winze below the 550 level a distance of 4 feet, making a total of 67 feet. The reef is carrying a well-defined hanging wall, and is about 10 inches wide, showing at intervals loose colours of gold. This place has been suspended for a time on account of the sinking of the engine shaft. The intermediate level below the 300 south of old winze on the Kapanga reef has been advanced by two men 12 feet, total length 71 feet. There is no change of any consequence since my last report. During the month a good deal of work has been done on the hanging wall of Scotty's reef above and below the 300 feet level. In some places the "branch" is over 20 inches wide, showing iron and arsenical pyrites, and occasionally large blotches of gold are met with. Altogether the prospects generally are most cheering, and we are in great hopes of striking some rich stone shortly. We have cleared and timbered an intermediate level above the 300, and repaired the various main drives and footways. The above work has been executed by eight men. We crushed for the month 40 tons of quartz, yielding 50 ounces 19 dwts. retorted gold. The machinery and pitwork are working fairly well.—Coromandel Section: 12 tributers are working here, some of whom are obtaining fairly good stone.

MOUNT LYELL.—The following particulars are extracted from the mine manager's reports to hand by last mail:—Week ending January 10: No. 1 shaft: Have sunk the engine shaft 6 feet, total 106 feet 6 inches. Timbered 13 feet, total timbered 103 feet. The country sunk through is schist. An opening out set has also been put in at the 100 feet level. The 50 feet level north drive has been advanced 11 feet in all from the shaft, The ore broken and raised for the week contains 15,000 ounces of silver. Are at present only stoping four shifts in the week, as we should otherwise interfere with work at shaft.—No. 2 shaft: Have sunk this shaft 7 feet 6 inches, total 60 feet 6 inches. There is no change to report.—No. 5 Tunnel: Have advanced the tunnel 30 feet, total 70 feet. Country driven through, soft black slate. Three shifts will be employed from this date.—Ore Despatched: The packers have taken away one hundred bags, equal to 4 tons 15 cwts. Week ending January 17, 1894: Engine Shaft: Have sunk the shaft 3 feet 6 inches, total 110 feet; and completed the timbering of same to the bottom. The ladder way has also been put in from the 50 feet level to the 100 feet level Three shifts have been put on to cut out the chamber at the 100 feet level. In 50 feet level the north drive has been extended 6 feet, total 17 feet. In No. 2 shaft have sunk the shaft 3 feet 6 inches, total 64 feet, and timbered 18 feet; total timbered 61 feet. The sinking is in schistose rock much harder and tighter than it has been. Have driven No. 5 tunnel a further length of 50 feet, total 120 feet. The country passed through is soft black slate.—Ore: About 29 tons 4 cwts. (586 bags), containing 37,616 ounces of silver, have been sampled and bagged. 196 bags, weighing 9½ tons, containing 16,099 ounces of silver, have been taken away by the packers.

NEW HERIOT.—Operations at mine, week ending January 15: 163 feet 6 inches driving, sinking, and crosscutting done. Battery ran 6 days 19 hours; crushed 1014 tons; 454 3 ounces smelted gold won.—Cyanide Works: 602 tons filled into vats; assay value of charge 6·773 dwts. Driving has been commenced on main reef 3rd level; reef in drive west 54 inches wide, Sample assayed gives 27 dwts. per ton. On East side reef is 48 inches wide and assays 25 dwts. All machinery is working well.

TASMANIA CROWN SILVER.—Manager's report, 19th January: Main Shaft, East Cross Cut: Drive north has been extended 19 feet, making a total length of 41 feet from cross cut. At this point the bore hole, which was being kept ahead, disclosed the fact that we were getting into similar ground to that met with in the east end at 125 feet. Every precaution was at once taken to prevent any damage from an inrush. Next day the water broke through and completely filled the drive with debris to its intersection with the main level, where it was checked by the breastings. The rush of water carried a quantity of the fine slimes to the shaft, and the pumps were again in danger of being choked, but by setting them going faster, and by keeping men continually stirring up the silt in the cistern, we were able to keep the pumps going, and so prevented the flooding of the mine. This rush of water lasted only for a few hours, and as the surface of the ground has again slightly subsided it seems probable that the water has been dammed back as before. We intend to have this drive for the present and allow the ground to drain West drive has been extended 24 feet. Since last report this ground has changed to a hard quartzite giving off a little water.—Sale of Ore: During the fortnight we had 123 tons of crude ore dressed, producing 21 tons 12 cwts. 2 qrs. of concentrates, which have been sold for £189 4s. 2d.—George R. Tilly, manager.

UNITED GOLD FIELDS OF MANICA.—Return of work done during fortnight ending Saturday, January 13: Adit No. 1 driven 5 feet 6 inches. No change in nature of rock; still very hard drilling and tough blasting schist; no timber used. Total length driven to date, 441 feet 6 inches. Adit No. 2 driven 13 feet 6 inches; still in hard tough schist, breaking a little better, having small quartz veins running through the rock. Two sets timber fixed, length 35 feet 6 inches, diameter 7 inches, lagged roof and sides. Total length driven, 493 feet.

VICTORIA AND QUEEN GOLD.—Copy of manager's report for fortnight ending January 10: During the fortnight your underlie shaft has been sunk a further 9 feet, making the total length from plat 34 feet; the reef averaging about 1 foot, and the quality about the same as at the time of last report. We have had a great drawback in sinking, through not having timber to put the skids in, and, consequently, having to handle the dirt four times to get it to the bucket. The timber came yesterday, and I laid the skids to the bottom. Brophy and party started their contract last Tuesday in the winze, and have sunk 9 feet up to date, making total from level 14 feet. The reef averages from 6 to 8 inches of good mineral stone. I have had the men working single handed in the stopes; the reef averages from 8 inches to 1 foot of good quality stone. We have also timbered up the back of the shaft, and have put in good substantial timber in the plat at the back of the shaft. The timber for the new brace is delivered and stacked on the ground. The boiler is expected to be landed at Townsville to-day, and we may look forward to it being delivered shortly. We have hauled during the fortnight about 30 tons, making the total in the paddock about 60 tons. The teams commenced to cart to-day. Everything in connection with the mine in good working order.

GELDENHUIS DEEP. — The London agents, the Exploration Company (Limited), have received the following letter from the manager of the mine, dated Elandsfontein, February 9: The following is a report of work done on the property during January: In No. 1 (east) shaft the crosscut on No. 2 level was driven to a distance of 79 feet, or 58 feet for the month. At this level we also cut out for a chute and put it in. On No. 3 level we drove west 39 feet and east 38 feet, also turned on the reef and sunk the incline 10 feet. Our total driving and sinking in this shaft for the month was 145 feet. Owing to bad ventilation it was found necessary to partition the shaft, this was done down to 500 feet, the first 100 feet having been down previously. No. 2 (main) shaft was sunk during the month to a depth of 491 feet, or 60 feet for the month. This is the best work done as yet in this shaft. Our sinking will be somewhat retarded this month, owing to our having to cut a station for our new pumping plant. On the surface the building for the new smiths' shop is about completed; we are at work getting the machinery in the workshops in place, and hope to have all in running order shortly. The work of erecting the new Riedler compressor has been progressing very slowly, as we had to get a large casting made in town to replace one that was broken in transport. This casting we have found necessary to fit to its place, and this has considerably retarded the work. The excavation for the new winding engine at No. 2 shaft is completed, also the excavation for the permanent shop engines. We are erecting 16 new men's quarters, and intend putting a reading room in the same building. Our cargo of timber is coming in and being unloaded on our siding rapidly, so we already experience the convenience and benefit of having a private siding. Since February 1 we have driven the crosscut on the second level, No. 1 shaft, 96 feet, or 17 feet for the month. On No. 3 level we have not done anything this month, but have sunk the incline shaft to a depth of 27 feet, or 17 feet for the month.

AUSTRALIAN BROKEN HILL CONSOLS.—The mining manager reports by mail for the fortnight ended January 18: Block 96, main shaft, 280 feet level east No. 4 rise (off prospecting drive) driven 12 feet; total, 12 feet. Lode very flat containing small bunches of galena, with small particles of native silver disseminated through the ore. Have passed through schist into diorite. Lode at present showing galena, but no native silver. An assay of the ore gave 289 ounces 18 dwts. 8 grains silver, and 75·75 per cent. lead. Incline stoped 7 feet east and 4 feet west. During the fortnight men have been engaged in stoping on either side of the incline, near where the last large piece of native silver was found. No ore has been met with. Will resume sinking on Saturday, and the spaces stoped will shortly be used as stations from which to commence drives. No. 4 level east of incline driven 10 feet; total, 135 feet. Country still very hard. Lode compact and without change. No. 3 level east of incline stopes off No. 1 winze driven 4 feet. Stopes off level driven 13 feet. A little fahlerz and galena have been met with. Men now engaged in stripping upper side of level. Stoping off 280 level west driven 12 feet. Iodide of silver continues to be found in limited quantity. 280 feet level west prospecting drive, driven 17 feet; total, 98 feet. A most important change has occured here. Galena was struck assaying 57 ounces 19 dwts. 16 grains silver, and 72·93 per cent. lead. The vein of ore has continued in drive for about 12 feet, and still shows in face of drive. Note.—The quantity of rock mined during the fortnight was 2988 cubic feet.

BALAGHAT MYSORE.—Captain Jos. Pryor, February 7: Ogle's Shaft: We are making fairly satisfactory progress with the cutting of the necessary ground for the tip-plate, &c., at the 800 feet level. The 800 feet level north has been driven 12 feet, or 14 feet 6 inches from the shaft. The lode presents a kindly appearance, and carries a little quartz which I think will very soon considerably improve. The 800 feet level south has been extended 7 feet 9 inches, or 10½ feet from the shaft. The lode is of a promising character, but as yet it does not yield any quartz to value. Being desirous of completing the plat and getting the shaft in readiness for resuming the sinking below this level as early as possible we have decided to suspend for the present the south drive, so that we may force the work around the shaft with greater speed. The No. 1 winze in the botton of the 730 feet level north has been sunk 7 feet 6 inches, or 51 feet below the level. The quartz is still very small (being only 3 inches wide), it, however, assays 7 ounces 18 dwts. 16 grains per ton. I believe it will very soon again improve in size. The stopes in the bottom of this level yield quartz of from 6 inches to 1 foot wide, and assay on an average 1 ounce 7 dwts. 16 grains per ton. The stopes in the back of this level produce quartz of from 9 inches to 1 foot wide, and assay on an average 2 ounces 1 dwt. 1 grain of gold per ton. The stopes in the bottom of the 660 feet level north yield quartz of from 6 inches to 1 foot wide, and assay on an average 19 dwts. 6 grains per ton. Haines' shaft has been sunk 7 feet 9 inches, or 43 feet 9 inches below the 800 feet level. The quartz is about 18 inches wide, and assays 12 dwts. 3 grains per ton. The 800 feet level south has been driven 17 feet 3 inches, or 137 feet 9 inches from the shaft. The quartz varies from 2 feet to 1 foot 3 inches wide, and assays 9 dwts. 5 grains per ton. The No. 1 winze in the bottom of this level has been sunk 7 feet 9 inches, or 10 feet 9 inches below the level. The quartz is 1 foot wide, and assays 11 dwts. 4 grains per ton. The stopes in the back of this level produce quartz of about 15 inches wide, and assay on an average 16 dwts. 10 grains per ton. The No. 2 or midway winze in the bottom of the 730 feet level south has been sunk 7 feet, or 42 feet below the level. The quartz has become pinched again, and is now only 3 inches wide. It, however, assays 2 ounces 3 dwts. 20 grains per ton. This falling off in the size of the quartz is, we think, only of a temporary nature, and that ere long it will again increase in size. The stopes in the bottom of the 730 feet level south yield quartz of from 9 inches to 1 foot wide, and assay on an average 7 dwts. 14 grains per ton. The stopes in the back of this level produce quartz of 1 foot wide, and assay 13 dwts. 1 grain per ton. Tennant's shaft has been sunk 10 feet 3 inches, or 39 feet 6 inches below the 285 feet level. The quartz averages across the length of the shaft fully 2 feet 6 inches wide, and assays 11 dwts. 4 grains per ton. The crossing or small cross course referred to in my last report is now in the southern end of the shaft, and in the course of another blast or so we shall altogether have gone through it. Under this crossing the lode appears to be getting more settled in size and character, as well as undoubtedly improving in value, the recent assays having increased from 7 and 8 dwts. to 10 dwts., and to-day 11 dwts. 4 grains. per ton, and this with every indication of further improving. We are pushing on as fast as possible with the timbering of the shaft, and hope very soon to commence fixing the double skiproad.—Surface: The general surface work is being proceeded with in the usual way.

BRILLIANT BLOCK.—Mine manager's report for fortnight ending January 10: Underlie shaft deepened 9 feet; total depth below No. 4 plat 108 feet. The reef in the bottom is about 5 feet thick, but the quality not so good. No. 4 level west extended 29 feet by contract; total length from shaft 327 feet. The formation is 7 feet thick in the face, but carries no stone at present. Stoping is being carried on over the drive on a reef varying from 1 to 4 feet thick of low quality. The footwall drive in No. 4 level east has been extended 4 feet by wagesmen and 8 feet by contract; total length from shaft 232 feet. It is showing a reef of 3 feet thick, of good quality. The hanging wall drive on this level is extended 18 feet; total length from starting point 49 feet. The reef in the face is about 1 foot thick, of fair quality. Stoping is being carried on over these drives on from 6 inches to 2 feet of good quality stone. Stoping is being carried on over No. 3 level east on 20 inches of good quality stone. We are stoping in one stope under No. 2 level east on 4 feet of stone of low quality. Stone hauled 750 skips, equal to about 410 tons. Water haulage rather more than usual. Stone crushed at Bonnie Dundee mill 400 tons for 334 ounces 5 dwts. gold. The Babcock boiler has been cleaned and overhauled, and is now in good working order.

CHIAPAS.—Mine report for fortnight ending January 31: Providencia main advanced 8 feet 2 inches, making a total of 389 feet 2 inches. Suspended for the present. Providencia No. 2 west drift (rise in back of, to connect with open cut) advanced 9 feet 10 inches; 30 feet from face of level on low grade streak of ore. Santa Fe drift advanced 5 feet, making a total of 26½ feet; improved; 3 feet of good stone. Taylor winze No. 3 advanced 8 feet, making a total of 17 feet 2 inches. In white spar. Taylor main rise at mouth of Taylor drift west No. 2 advanced 10 feet 2 inches; very poor. Rising to meet winze above. Santa Fe winze or No. 2 west advanced 5 feet 4 inches, making a total of 30 feet 2 inches; no change. Santa Fe winze No. 4 to connect with rise from below in Taylor main advanced 5 feet 10 inches, but little mineralised. Santa Fe hill drift south advanced 32¾ feet. Driven to connect with old drift as an open cut. Extracted 350 tons of ore. Taylor No. 2 extracted 29 tons of ore. Taylor No. 3 extracted 257 tons of ore. Old Providencia extracted 192 tons of ore. Santa Fe drift and winze No. 4 extracted 66 tons of ore.—(Signed) E. T. McCarthy.

HARRIETVILLE.—Fortnightly report of Mr. T. G. Davey, superintendent, dated January 19: Mons Meg Mine: Winze on main shoot below tunnel D sunk 8 feet, total 95 feet. Lode continues large, but although of promising appearance has not improved in value. We are now making preparations to drive north and south on course of lode as soon as a well hole has been sunk.—Stopes: The main footwall has been reached in the north stope at back of tunnel D, the lode formation being 20 feet wide, and consisting of sandstone with minute veins of quartz which are fairly auriferous. The presence of so much barren sandstone, however, renders the average quality of low grade, it being impossible to separate the one from the other, so that the whole has to be crushed. Lode in stopes over 290 feet level below J 4 feet wide, but becoming poor as it approaches the fault. North stope over 240 feet level, lode 2 feet wide but of low grade. The whole of this stope has caused much disappointment as the lode was of fair quality both in the drive above and that below, as well as in a rise which was put up from one level to the other. At the 40 feet level we have commenced an underhand stope. The lode is 6 feet wide, and carries a vein 1 foot wide of highly auriferous quartz.—Swindle lode: Tunnel extended 11 feet, total 188 feet. Passing through a series of veins, but main lode not yet intersected.—Tiddledee Mine: Winze on new shoot below tunnel B sunk 4 feet, lode 3 feet wide, and carrying a little visible gold.—Surface: Tunnel under Jackass road advanced 13 feet, total 138 feet. We are about to drive on the lode which was recently traversed.—Returns: The returns for four weeks to 10th instant are as follows, viz.:—Mons Meg, 690 tons; Tiddledee, 37 tons; Jackass, 31 tons; yielding together 101 ounces 15 dwts. of gold; pyrites, 23½ tons (including 21 tons old tailings) for 19 ounces of gold. This low return is partly attributable to delays caused by holidays, but mainly to falling off in value of stopes.

LA PLATA.—The following is the latest news from Mr. Niness, the agent of the Gold Fields of Mozambique (Limited), dated Massi Kesse, January 7th: Alluvial Claims: I have pegged off 20 additional claims on the Zambuzi, to the west of the 10 claims we had previously. From pannings, which Mr. Alford has seen, I am satisfied that we have rich alluvial claims, which, if worked economically, will pay handsome profits. The Zambuzi has a nice fall, and many curves where the course of the river can be turned with comparatively little expense. Kaffirs started working the alluvial soon after my arrival here, and at the present time, although the rains at times are heavy, they are still panning away with their wooden dishes, and get gold in sufficient quantities to pay them, otherwise I am sure they would not work in the rain, even on their own account.—Bettencourt Claims: I have succeeded in securing these 10 claims, and settled on exceptionally good terms for the development work already carried out. (N.B.: Mr. Niness previously reported very favourably on this block and strongly advised their acquisition.)—Inhamcarara.—I send you by this mail sketch plan of the district, showing all the blocks at present pegged out. You will see that Mr. Pardy has pegged on out our extension, which speaks well for our claims. The East Africa Syndicate has also claims here, but they are not so good as ours. (Mr. Pardy has pegged a large number of alluvial claims here. I can show much better results from ours on the Zambuzi. I am now prospecting in different other directions.)—Total Claims pegged out: Our claims up to date stand thus: The Lion 14 claims, the Tiger 12 claims, the Menezes 10 claims, the Bettencourt 10 claims, the Zambuzi 30 claims (alluvial); total 76 claims. Prospecting: I intend camping in the Chua valley, and will do my best to find a rich reef. The directors think that the above news will be considered satisfactory by La Plata shareholders, and that Mr. Niness has shown both energy and intelligence in our interests.

MOUNT ZEEHAN (TAS.).—Manager reports for week ended 16th January: Argent Section: Main engine shaft, No. 6 lode, 72 feet level north, stope in back of level continues. Ore raised 45 tons fair quality seconds and 6 tons 4 cwts. firsts. Lode is from 1 foot 6 inches to 2 feet wide, carrying good ore. Stope in back of 72 feet level north No. 4 lode continued. Ore raised 46 tons 4 cwts. good quality second. North air shaft 30 feet level north has been extended 6 feet, total 25 feet. Lode 1 foot wide, poor, but hope to meet with something better shortly. 132 feet level south has been extended 4 feet 6 inches, total 250 feet. Have here met with a wall, which may prove to be Frances lode. Whip shaft has been sunk 5 feet, total 25 feet. No change to report.—Concentrator: We restarted milling on the 8th inst. with a parcel of second class ore for a local company, and treated 123 tons 10 cwts. in 34 hours. Have also run the mill on our own ore 26 hours, and milled 83 tons seconds for 19 tons 19 cwts. concentrates, containing about 13 tons 11 cwts. lead, and 1494 ounces silver.—Machinery: Engines and boilers are working well since the recent overhaul.

MYSORE GOLD.—R. Hancock, February 7: Mining Operations for the fortnight ending February 5: Rowse's shaft has been sunk 8 feet, making a total depth of 113 feet 6 inches below the 1360 feet level. The end in the 1360 feet level north, south of cross cut, has been driven 2 feet 6 inches, making a total distance driven of 94 feet 6 inches. The lode is 1 foot wide, assaying 1 ounce. The rise in the back of this level has been put up 7 feet, making a total height of 25 feet. The lode is 2 feet 6 inches wide, assaying 7 dwts. 19 grains. The 1260 feet level north end has been driven 27 feet, making a total distance driven of 666 feet 6 inches. The lode is 1 foot wide, assaying 1 ounce 21 grains. The winze in the bottom of this level has been sunk 14 feet 6 inches, making a total depth of 76 feet. The lode is 3 feet 6 inches wide, assaying 13 dwts. 1 grain. We have two machines engaged cutting out a piece of ground in the back of this level for fixing a winding engine. Lode 4 feet wide, assaying 2 ounces 3 dwts. 6 grains. In the 1260 feet level south, cross cut west, the men have been engaged squaring the end. The rise in the back of this level has been put up 14 feet, making a total height of 25 feet. The lode is 1 foot 6 inches wide, assaying 2 ounces 3 dwts. 6 grains. The lode in the stope in the back of this level is 3 feet wide, assaying 4 ounces. In the 1160 feet level north we have commenced to drive south on the quartz intersected at the foot of the rise, which has been driven on 13 feet. The lode is 3 feet wide, assaying 5 dwts. 5 grains. There are four stopes in this level, the average width of the lode being 2 feet 7 inches, giving an average assay of 10 dwts. 18 grains. In the 1160 feet level south the end has been driven 11 feet, making a total distance driven of 90 feet. In the 1060 feet level north there are three stopes, the average width of the lode being 1 foot 3 inches, giving an average assay of 19 dwts. 3 grains. We have also three pares of men engaged stripping down in the bottom of this level, in which the lode is 1 foot wide, assaying 2 ounces 3 dwts. 6 grains. In the 990 feet level north we have a pare of men engaged stripping down side in the back, in which the lode is 1 foot wide, assaying 1 ounce 12 dwts. 6 grains. In the 890 feet level north there are three stopes, the average width of the lode being 2 feet, giving an average assay of 1 ounce 3 dwts. 22 grains. We have also a pare of men engaged stripping down side in the back of this level in which the lode is 1 foot wide, no assay made. In the 780 feet level north the lode in the stope in the back is 2 feet 6 inches wide, assaying 7 dwts. 19 grains. In the 620 feet level north of cross cut the end has been driven 27 feet, making a total distance driven of 202 feet 6 inches. The lode is 2 feet wide, assaying 5 dwts. 5 grains. There are two stopes in the back of this level, the average width of the lode being 2 feet 6 inches, giving an average assay of 8 dwts. 18 grains. In the 620 feet level south of cross cut the end has been driven 1 foot 3 inches, making a total distance driven of 58 feet 9 inches. The lode is 6 inches wide, assaying 5 dwts. 5 grains. The rise in the back of this level has been put up 10 feet 6 inches, making a total height of 64 feet. The lode is 1 foot wide, assaying 6 dwts. 12 grains. In the 620 feet level south the lode in the stope in the back is 1 foot 6 inches wide, assaying 8 dwts. 11 grains. We have also a pare of men engaged cutting a plat at this level. On the 29th inst. we resumed by hand labour the driving of the first crosscut in the 466 feet level north from the shaft, which has been driven 1 foot. The rise in the back of 400 feet level north of crosscut has been put up 17 feet, making a total height of 45 feet. The lode is 4 feet 6 inches wide, assaying 3 dwts. 22 grains. There are two stopes in the 400 feet level north, Taylor's shaft, the average width of the lode being 3 feet 6 inches, giving an average assay of 7 dwts. 19 grains. In Gilbert's shaft the 650 feet level north has been driven 20 feet 6 inches, making a total distance driven of 181 feet 6 inches. There is nothing here to report. There are three stopes in the 520 feet level north, the average width of the lode, being 2 feet 10 inches, giving an average assay of 4 dwts. 13 grains. The lode in the stope in the back of the 520 feet level south is 1 foot 6 inches wide, assaying 1 ounce 0 dwts. 21 grains. There are two stopes in the 360 feet level north, the average width of the lode being 2 feet, giving an average assay of 19 dwts. 13 grains. There are two stopes in the 290 feet level north, the average width of the lode being 1 foot 5 inches, giving an average assay of 10 dwts. 9 grains. We have decided to take the machine out of No. 6 stope, and put it to rise in the back of the level 108 feet north of the shaft. There are two stopes in the 290 feet level south, the average width of the lode being 3 feet 3 inches, giving an average assay of 3 dwts. 6 grains. Tennant's shaft has been sunk 6 feet 3 inches, making a total depth of 24 feet below the 520 feet level. The lode is 3 feet wide, assaying 9 dwts. 2 grains. On the 1st inst. we put a rock drill here. The 520 feet level north has been driven 43 feet, making a total distance driven of 241 feet. The lode is 2 feet wide mixed, assaying 3 ounces. The lode in the rise and stope in the back of this level is 5 feet wide, assaying 14 dwts. 8 grains. The lode in the stope in the back of the 320 feet level north, south of cross cut, is 1 foot 8 inches wide, assaying 9 dwts. 2 grains. 290 feet level south, south of cross cut, has been driven 2 feet, making a total distance driven of 47 feet 6 inches; the lode is 8 inches wide, mixed. The rise in the back of the 290 feet level south, north of cross cut, has been put up 16 feet; the lode is 1 foot 6 inches wide, assaying 5 dwts. 5 grains. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 14 dwts. 8 grains. The cross cut east in Schaw's shaft, 450 feet level north, has been driven 3 feet, making a total distance driven of 5 feet. The No. 3 rise in the back of this level has been put up 11 feet, making a total height of 31 feet 6 inches; the lode is 9 inches wide, assaying 13 dwts. 1 grain. The winze in the bottom of this level has been sunk 3 feet, making a total depth of 55 feet; the lode is 1 foot wide, assaying 19 dwts. 14 grains. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 19 dwts. 14 grains. 450 feet level north, south of cross cut, has been driven 13 feet, making a total distance driven of 303 feet; the lode is 2 feet wide, assaying 1 ounce 7 dwts. 10 grains. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 9 dwts. 2 grains. The winze in the bottom of 320 feet level north has been sunk 2 feet 9 inches, making a total depth of 132 feet 9 inches; the lode is 1 foot wide, assaying 8 dwts. 11 grains. The rise in the back of the 320 feet level, north of cross cut, has been put up 5 feet 6 inches, making a total height of 10 feet; the lode is 9 inches wide, assaying 9 dwts. 2 grains. The lode in stope in back of this level is 6 inches wide, assaying 14 dwts. 8 grains. The 320 feet level south of crosscut has been driven 3 feet, making a total distance driven of 144 feet 6 inches. There is nothing here to report. The lode in the stope in the back of this level is 1 foot 6 inches wide, assaying 19 dwts. 14 grains. The 220 feet level north has been driven 1 foot 3 inches, making a total distance driven of 226 feet 6 inches. These men have also been engaged taking out some quartz in the side of the 450 feet level south of crosscut.—McTaggart's shaft: The 320 feet level north has been driven 18 feet, making a total distance driven of 107 feet. The lode is small and poor.—Glen shaft: The 250 feet level north has been driven 18 feet 6 inches, making a total distance driven of 1236 feet 6 inches. There are at present only small strings of quartz in the end, assaying 5 dwts. 5 grains. The crosscut east in this level has been driven 3 feet, making a total distance driven of 223 feet. Ribblesdale's shaft has been sunk 10 feet, making a total depth of 193 feet. The 1060 crosscut west has been driven 24 feet 9 inches, making a total distance driven of 312 feet 3 inches. The No. 3 crosscut east of Eastern Prospect shaft has been driven 16 feet, making a total distance driven of 52 feet and suspended. The men have now been put to drive south from the end of the No. 2 crosscut, driven 20 feet. The crosscut east from William's shaft at the 173 feet level has been driven 8 feet 3 inches, making a total distance driven of 15 feet. The health of the camp is very good.

MYSORE REEFS.—Fortnightly report of Captain M. Scantlebury, mine agent, dated February 7: Underlie Shaft. I cabled you on the 30th January that the lode in this shaft was 3 feet 9 inches wide, and that the average of five assays gave 1 ounce 19 dwts. of gold to the ton. I am sending a case containing 2 cwts. of quartz per ss. *Golconda*, which left M dras on the 3rd inst. During the past two weeks this shaft has been sunk 10 feet, now 189 feet 6 inches from surface. The lode at present is 5 feet wide, showing good walls. On the footwall there is a run of quartz intermixed with arsenical and iron pyrites 2 feet 6 inches wide, assaying 7 dwts. 3 grains and 8 dwts. 11 grains of gold to the ton. Against the hanging wall the quartz is 1 foot wide, assaying 3 ounces 6 dwts. 15 grains and 3 ounces 15 dwts. 18 grains of gold to the ton. The filling between the two leaders is composed of country rock and a little pyrites. From the smalls after the country rock has been discarded we have made three assays, with the following result:—Sample No. 1 1 ounce, sample No. 2 1 ounce 19 dwts 4 grains, sample No. 3 9 dwts. 12 grains. The lode is looking well, and I need not say if it only continues we shall soon open up a good mine. A tramway is laid, and the stuff broken from the shaft is being stacked for the mill. Vertical shaft has been sunk 13 feet, now 184 feet 6 inches from surface. We have no water, and if we do not cut any before we reach a depth of 200 feet I have decided to cross cut east to intersect the lode. In about 15 days, all going well, we shall reach this depth, when a cross cut of about 20 feet will reach the lode. I anticipate to see the lode in one month from date, and expect to find it as good as what it is in the underlie shaft. Trial shaft, on the western run of old workings, has been sunk 4 feet 6 inches, now 35 feet from surface. I have put on another shift of men here, and shall now go down faster.

NEW MINERA.—Report for two weeks ending February 23: 255 yard level 4 men on tribute, estimated to produce about 10 tons lead ore and blende per month. 275 yard level east of No. 2 rise on north lode, 6 men on tribute. Lode worth 3 tons per fathom, estimated to produce 16 tons blende per month. East of No. 2 rise on south lode stoped west of crosscut on middle lode, 2 men on tribute. Lode worth 1½ ton per fathom, estimated to produce 3 tons blende per month. 295 yard level stope on north lode west of crosscut. Lode 9 feet wide worth 3 tons blende per fathom. East of winze on north and south lodes, 4 men on tribute. Lode worth 2½ tons per fathom, estimated to produce 9 tons lead ore and blende per month. East of sump, 2 men on tribute. Lode worth 2½ tons per fathom, estimated to produce 4½ tons blende per month. West of sump 2 men on tribute. Lode worth 3 tons per fathom, estimated to produce 5 tons blende per month. 315 yard level driving east of main crosscut. Better, now worth 1 ton blende per fathom. Stope west of Incline shaft 2 men on tribute. Lode worth 3 tons per fathom, estimated to produce 5 tons blende per month. Stope near forebreast 2 men on tribute. Lode worth 2½ tons per fathom, estimated to produce 5 tons blende per month. Rise north of Incline shaft 2 men on tribute. Lode worth 1 ton per fathom, estimated to produce 2 tons blende per month. Stope east of Incline shaft 2 men on tribute. Lode worth 2½ tons per fathom, estimated to produce 4½ tons per month. 335 yard level driving east of Incline shaft, on tribute and yard work. Lode worth 2 tons blende per fathom. West of Incline shaft 2 men on tribute. Lode worth 2½ tons per fathom, estimated to produce 4½ tons per month. East of Incline shaft 2 men on tribute. Lode worth 2½ tons per fathom, estimated to produce 4½ tons per month. East of rise 2 men on tribute. Lode worth 2 tons per fathom, estimated to produce 4 tons per month. Near forebreast 2 men on tribute. Lode worth 2½ tons per fathom, estimated to produce 4½ tons per month.—Dressing: 34 tons blende and 25 tons lead ore have been sent off since last report, making the total quantity sold 3823 tons blende and 1689 tons lead ore.

NINE REEFS.—Fortnightly report of Captain John Woolcock, mine agent, dated 7th February: Vyvyan's Shaft: We continue to make good progress in the sinking of this shaft, which has been farther deepened 9 feet 8 inches; total distance below the 380 feet level 27 feet 6 inches. I am pleased to say the ground in the last 4 feet sinking has not been so hard, and is more congenial for the production of gold. The lode matter is carrying a little more quartz and pyrites, and although it is at present unproductive it looks promising to soon improve. The 380 feet level south has been driven 7 feet 1 inch, total distance from shaft 48 feet 9 inches; there is no change here to report, the ground continues hard, and the part of the lode driving on is not yet of sufficient value to call for remark.—The 300 feet level South: The winze sinking in the bottom of this 100 feet south of shaft has been sunk 5 feet 5 inches, total distance below the level 19 feet. The lode matter is about 20 inches wide, but the quartz leader varies from 6 to 8 inches wide. A sample broken from this yesterday gave by assay 2 dwts. 8 grains of gold per ton. The 220 feet level south has been advanced 8 feet 6 inches, total distance from shaft 408 feet 5 inches. This end has somewhat improved since last reported. For a long distance we have been driving through a very poor streak or belt of ground in which the lode carried very little quartz, but in the last 4 feet the quartz has commenced to form itself again, and is now in the bottom of the end 5 inches wide. We have taken several samples, but so far they have been of low quality, but I am hoping if the quartz continues that it will improve as we drive south.—Bennett's Shaft: The cross cut driving west at the 145 feet level to the north of this shaft has been driven 7 feet 2 inches, total distance

from shaft, 129 feet 10 inches. There is very little change to report here. The end is letting out a good stream of water, but up to the present we have met with nothing of value.—South Shaft: We have made very good progress here during the past fortnight. It has been strongly timbered from 65 feet deep to surface with 7 inch sets complete, and the shaft further deepened 5 feet 11 inches, total depth from top of sets, which is 13 inches above the surface, 77 feet 11 inches. The ground is getting a good deal harder and letting out an increased quantity of water, but not sufficient to materially interfere with our working so far. Last week we intersected another branch of quartz about 5 inches wide underlying west, but from three or four pan washings we found it was not gold-bearing.—Surface: The small air compressor, receiver, and winding engine will be ready for working in two or three days. We shall then be waiting for the new tubes, so as to go on with the re-tubing of the boilers; I have been expecting the tubes for several days, and trust they will soon be delivered. The carpenters are engaged about a new head gear, after which they will commence to put a house about the machinery, &c. There is nothing to call for remark in any of the other surface work. We have no trouble with our machinery or pitwork, which are in good order and working well.—Health: The health of camp continues to be very good.

NUNDYDROOG.—F. W. Grey, 7th February: Report of the work done for the month of January: Taylor's shaft, 1000 feet north driven 89 feet 6 inches; total length, 209 feet 6 inches. The lode is small, 4 inches in width, and assays 5 dwts. 12 grains per ton. 1000 feet south driven 49 feet; total length, 107 feet. The lode is also small here, being 6 inches wide, and assaying 7 dwts. 12 grains per ton. 840 north winze in bottom sunk 37 feet 6 inches; total depth, 88 feet 6 inches. The lode is 6 inches wide, and assays 9 dwts. 18 grains per ton. 840 north stope in back, ground stoped 15 fathoms. The lode looks well, being 5 feet wide, assaying 18 dwts. 12 grains per ton. 840 north rise against main shaft risen 9 feet 6 inches; total height, 37 feet 6 inches. We have had to suspend this temporarily, as we could not clear the stuff. We also put out a crosscut west 8 feet to see if there was any quartz standing in the hanging side, but without success. We then commenced a stope in the bottom of the level, and cut 2½ fathoms in a lode 3½ feet wide, assaying 1 ounce 1 dwt. 18 grains per ton. 680 north driven 33 feet; total length, 33 feet. The ground is getting much harder. 600 north, rise in back risen 9 feet; total height, 64 feet. The lode is 6 inches wide, assaying 13 dwts. 520 north winze in bottom, distance sunk 12 feet 6 inches; total depth, 33 feet 6 inches. The lode is 1½ foot wide, and assays 12 dwts. per ton.—Main Shaft: We are making fair speed here, and are now down within 20 feet of the back of the 760.—North Shaft: We are also pushing on the work at this shaft, and are now within 40 feet of the 300. Kennedy's shaft sunk 18 feet; total depth 497 feet. We have made better speed here though the water is still very quick. 440 south driven 53 feet; total length 162 feet. The lode is small, 6 inches wide, and assays 5 dwts. 6 grains per ton. 440 north driven 74 feet; total length 292 feet. The lode is 1 foot wide, assaying 18 dwts. 12 grains per ton. 440 north stope in back, ground stoped 13½ fathoms in a lode 2 feet wide, assaying 2 ounces per ton. 370 north stopes in back and bottom, ground stoped 11 fathoms in a lode averaging 4 feet in width, and assaying 2 ounces 14 dwts. 12 grains per ton. 370 north cross cut east driven 14 feet; total length 20 feet. There is a great width of lode matter at this place, about 170 feet north of the shaft, and we put this cross cut into the footwall side to see if any more quartz was standing there. It is about 2 feet wide here, assaying 1 ounce 8 dwts. per ton. The drives, stopes, &c., working by hand labour are as follows:—

Working.	Ground Cut Ft.	in.		Size Lode. Ft.	in.		Assay value, Oz dts gr.
920 south drive	11	0	...	1	0	...	0 10 18
920 north drive	13	0	...	0	6	...	0 6 12
760 south No. 1 back stope	15	16	...	1	0	...	0 15 0
680 south No. 1 bottom stope	21	0	...	1	0	...	1 12 12
680 north No. 1 winze	13	0	...	1	3	...	0 9 18
— No. 1 rise and stope	25	0	...	3	0	...	0 13 0
600 north No. 1 bottom stope	19	6	...	2	0	...	1 0 12
— No. 2 —	11	0	...	2	0	...	0 17 6
— No. 3 —	11	6	...	1	6	...	0 12 0
— No. 4 —	28	0	...	1	0	...	0 14 0
— No. 5 —	23	6	...	1	6	...	0 10 18
— No. 6 —	17	6	...	1	0	...	0 10 6
520 north No. 1 bottom stope	26	0	...	3	0	...	1 12 12
— No. 2 —	35	0	...	2	6	...	1 8 0
— No. 3 —	32	6	...	0	6	...	1 9 6
— No. 4 —	13	6	...	1	0	...	1 7 0
— No. 5 —	17	6	...	1	3	...	0 12 0
— No. 6 —	18	6	...	2	0	...	0 8 18
— No. 7 —	10	0	...	1	0	...	0 11 6
450 north No. 1 bottom stope	22	6	...	1	6	...	1 0 0
— No. 2 —	28	0	...	1	6	...	1 0 12
— No. 3 —	18	6	...	1	6	...	0 7 12
— No. 4 —	18	6	...	1	6	...	0 12 0
370 north No. 1 bottom stope	19	0	...	0	9	...	0 13 0
— No. 2 —	7	0	...	1	0	...	0 12 0
Kennedy's—							
440 north rise in back	10	0	...	1	6	...	1 10 0
370 north cross cut east	3	0	...	2	0	...	1 6 0
370 south rise	8	0	...	0	8	...	0 13 0
— drive	12	0	...	0	6	...	0 16 6
300 north No. 1 rise and stope	13	6	...	2	0	...	0 15 0
— No. 2 back stope	16	0	...	1	3	...	1 6 0
— No. 3 back stope	27	0	...	0	6	...	0 14 0
300 south No. 1 rise and stope	15	0	...	3	0	...	0 9 18
— No. 2 back stope	32	0	...	1	0	...	0 10 0
— No. 3 rise and stope	18	0	...	0	9	...	0 12 0
160 south intermediate	14	0	...	0	3	...	0 4 6
— No. 1 rise and stope	14	6	...	0	6	...	0 16 6
95 north No. 1 bottom stope	25	0	...	1	6	...	0 7 12
— No. 2 —	13	1	...	1	0	...	0 18 0
— No. 3 —	21	6	...	0	3	...	0 8 18

Mills: Both mills and tailings machinery are running well, the return for January is, however, considerably less than for December, owing to the lode in the bottom levels being smaller and of lower grade than usual. Health: The general health of the camp is good.—Mill samples: Old mill samples: Rough quartz through stone-breaker, 1 ounce 10 dwts.; smalls, 1 ounce 1 dwt. 18 grains; tailings, 6 dwts. 12 grains.—New mill samples: Rough quartz through stone-breaker 15 dwts.; smalls, 16 dwts. 6 grains; tailings, 5 dwts. 14 grains.

OSCAR.—The following report has been received from the mine, dated Haugesund, February 21: Hodgkinson's lode: The lode in the deepest level is 5 feet in width, of which about 2 feet is quartz. The quartz is of good appearance, but carries very little mineral. Assays for the week show gold value 2 dwts. 14 grains to the ton. In the winze sinking in bottom of 400 north level the quartz is 30 inches wide; contains copper and iron pyrites, and assays gold value 3 dwts. 22 grains, per ton. The intermediate level carries a good run of quartz of the hard blue striped character. Assay value, 3½ dwts. per ton. The lode in the 200 is still running very flat with quartz 2 feet wide. At present the quartz is carrying an excessive quantity of galena, and assay values run high. Samples of lode quartz containing galena, taken yesterday, assayed value over 4 ounces gold per ton. The stope working in back of 150 south still produces fair mill stuff, having gold value 4 dwts. 13 grains per ton. Other workings are without alteration.

QUEEN'S CROSS REEF.—Copy of manager's report for fortnight ending January 9: Since my last report stoping has been continued over No. 5 level on a reef from 12 to 18 inches. We have hauled 41 tons for the fortnight, making the total quantity in paddock 164 tons. During the holidays we cleaned out the boiler and tested the same to 120 lbs. The machinery received a general overhaul. Davis and party, contractors for the sinking of straight shaft, have sunk 8 feet, making the total distance from surface 697 feet 6 inches. The ground is hard and bad to break. They have timbered up 75 feet, and are now 22 feet below timber. Everything in connection with the mine in good working order.

SOUTH-EAST MYSORE.—Fortnightly report of Captain M. Scantlebury, mine agent, dated February 7: Beresford's shaft has been sunk by hand labour 10 feet, now 52 feet 3 inches on the underlie of the lode, and 150 feet from surface. The lode is now 4 feet 6 inches between walls, and the quartz is 3 feet 6 inches wide, 1 foot 6 inches against the hanging wall, and 2 feet on the footwall. I have taken two samples from the footwall quartz, and two from the hanging wall, with the following result, according to assay:—Footwall quartz No. 1, 3 dwts. 6 grains; footwall quarts No. 2, 6 dwts. 12 grains; hanging wall No. 1, 13 dwts. 6 grains; hanging wall No. 2, 1 ounce 2 dwts. 12 grains. The bottom of the shaft is now, comparatively speaking, dry, and you will observe that much better progress has been made. I hope by the time that the shaft is 50 feet deeper, that the air compressor will be erected, so that we may be in a position to open on the lode with rock drills. Pigott's shaft has been sunk 4 feet 6 inches, now 129 feet from surface. The rock is extremely hard, and the progress in very hard rock by hand labour is always slow. I am hoping that we shall soon be through this hard bar.

DE LAMAR.—Copy of Capt. J. W. Plummer's monthly report for January: Mining, Ore Breaking Department: Wilson vein above the third level, average width of vein 4 feet, assaying $27 30 in gold and $1·33 in silver equal to $28·63 per ton. 77 feet vein above the sixth level west, average width of productive vein 6 feet 9 inches, assaying $11·70 in gold and $19·83 in silver equal to $31·53 per ton. This stope has not changed materially since my last report. 77 feet Vein, above the seventh level, west, average width of productive vein 10 feet, assaying $21·19 in gold, and $10·09 in silver, equal to $31·28 per ton. The balance of the vein in these two last-mentioned stopes produced shipping ore. 77 feet Vein, above the eighth level, the average width of vein being carried measures 8 feet 6 inches, assaying $8·74 in gold and $22·39 in silver, equal to $31·13 per ton. In addition to this class of ore there is the usual medium and low-grade ores. The stope has reached the easterly end of the ore body, and we are now operating on the west side. No. 5 Vein, above the sixth level, average width of vein 6 feet 6 inches, assaying in gold $25·33 and $4·26 in silver, equal to $29·59 per ton. No. 5 Vein, above the eighth level, average width of vein, 4 feet 5 inches, assaying $26·60 in gold and $8·68 in silver, equal to $35·28 per ton. No. 5 Vein, above the ninth level, average width of vein 4 feet 9 inches, assaying $24·30 in gold and $9·80 in silver, equal to $34·10 per ton. No. 5 vein above the eighth level, average width of vein 2 feet, assaying $40·75 in gold and $2·25 in silver equal to $43 per ton. No. 6 vein above the ninth level, average width of vein 2 feet 4 inches, assaying $29·80 in gold and $6·79 in silver equal to $36·59 per ton. No. 7 vein above the ninth level, average width of vein 6 feet, assaying $25·18 in gold and $3·63 in silver equal to $28·81 per ton. No. 7 vein about the eighth level, average with of the vein is 2 feet 7 inches, assaying $21·05 in gold and $2·85 in silver equal to $23 90 per ton. No. 7 vein above ninth level, average width of vein 3 feet 3 inches, assaying $27·33 in gold $4·95 silver equal to $32·18 per ton. No. 9 vein above seventh level, average width of vein 6 feet 3 inches, assaying $27·65 in gold and $10·68 in silver equal to $38·33 per ton. No. 9 vein above eighth level, average width of vein 5 feet 3 inches, assaying $21·35 in gold and $14·73 in silver equal to $36·08 per ton. No. 9 vein above ninth level, average width of vein 3 feet, assaying $35·43 in gold and $7·49 in silver equal to $42·92 per ton. Miscellaneous work:—North Branch, ninth vein, eighth level west: The branch is 3 feet wide, assaying in gold $28, and $5 silver, equal to $33 per ton. We trust this branch, or a portion of it, will reach to the seventh level as an independent vein. 77 feet Vein, hanging wall section, below eighth level: The vein here is 4 feet wide, assaying in gold $24, and $2·50 in silver, equal to $26·50 per ton. This branch has been fairly prolific from the first time it was entered. Prospecting department.—77 feet Vein, above fifth level, raise west: The full height of this raise is 50 feet. The average width of the vein for this height is 4 feet; average assay value $10·40 in gold and $1·50 in silver, equal to $11·90 per ton. (It is now improving.) A sampling of the bottom of the fourth level, immediately above the raise, yielded on the average $20 gold and $10 silver, equal to $30 per ton. The ore-body may have pitched westerly at a greater angle than we can determine with its present limited development. 77 feet vein ninth level east advanced for the month 22 feet 6 inches. The average width of the ore that pays is 4 feet, assaying $20 in gold and $8 in silver, equal to $28 per ton. We commence crosscutting through the large vein in a few days. No. 7 vein ninth level west has been extended 24 feet 6 inches for the month of January. The average width of the vein is 3 feet 8 inches, assaying $20·37 in gold and $7·25 in silver, equal to $27·62 per ton. No. 9 vein seventh level east advanced for the month 21 feet; average width of the vein 4 feet, assaying $16 87 in gold, $13·75 in silver, equal to $30·62 per ton. During the latter part of the month the vein became very narrow, and recently it reached its easterly extremity, and is now suspended. No. 9 vein seventh level west advanced for the month 34 feet; average width of vein 7 feet 3 inches, assaying $26·75 in gold and $2·75 in silver, equal to $29·50 per ton. No. 9 vein eighth level west advanced for the month 38 feet; average width of vein 1 foot 9 inches, assaying $27 in gold and $6·62 in silver, equal 33·62 per ton. The vein is gradually narrowing down. On the footwall branch the vein averages 3 feet wide, assaying $16 75 in gold, and $9 in silver, equal to $25·75 per ton. No. 9 vein ninth level east advanced for the month 67 feet 6 inches, average width 3 feet; one half of this is of low grade, and the other half, or 1 foot 6 inches, will assay $22 in gold and $4 in silver, equal to $26 per ton. No. 9 vein ninth level west advanced for the month 30 feet, average width 3 feet 2 inches, assaying $23·75 in gold and $10·50 in silver, equal to $34·25 per ton. We have passed through the disturbing influence, and the vein is now in its normal condition. Full depth of new incline shaft 105 feet. During the past month its progress was retarded on account of hard porphyry. A station was opened, and the tenth level cross cut was commenced a few days ago. The face of the cross cut shows hard porphyry. In addition to the above, the raise on the line of contract (between the dyke and the porphyry) above the seventh level east has been constantly worked in search of shipping ore, with varying degrees of success. The raise is now 59 feet in height. The seventh level east on the contact has been advanced 27 feet 6 inches, and occasional bunches of silver are found.—Milling Department: The stoppages during the month were of the ordinary character, including a shut down of 12 hours for the clean up. Table of worked performed for January: Number of wet tons crushed 3,659·59, number of dry tons crushed 3,289·40, assay value of the pulp—gold 0.98 ounces, silver 13·88 ounces, assay value of the tailings—gold 0 196 ounces, silver 1 81 ounces, total percentage saved 82·28 per cent., gold 79·96 per cent., silver 87·08 per cent., number of Doré bars produced 26, number of ounces pure gold produced 2,346·991, number of ounces fine silver produced 45,490·68, value of gold produced $46,939 83, value of silver produced $30,933 63, equal to $77,873·46, miscellaneous revenue $91·29, ore shipped during the month $14.000, equal to $91,964 74, deduct costs and expenses for the month $40,384 11, estimated profit for month (or at $4·80 to £ sterling, £10,526) $51,580·63.—Surface Work: No work of any consequence has been performed on the surface. The cellars and buildings that escaped the hotel fire have been temporarily fitted up for storage purposes, and one man is employed looking after the water ditch leading to the mill. There is a good supply of water for milling purposes. The above covers our work during the past month. Everything is in good order. The snows are exceedingly heavy, ensuring a plentiful supply of water during the summer months.

LA PLATA.—The following report, dated Mazi Kessi, January 17th, has been received from Mr. Nine-s:—"Bettencourt Claims: I am living on this property now, and have every faith that it is a most valuable property. I am sorry I did not send you some specimens therefrom through Mr. Alford. I have had over 2 ounces pannings from this reef. Its situation for working economically cannot be improved, and I shall be greatly disappointed if it does not turn out one of the richest properties in Manica—which is saying a great deal.

PROVINCIAL SHARE MARKETS.

THE CORNISH MINE SHARE MARKET.

Mr. Samuel John Davey, Dealer in Cornish Mine Shares, Redruth, Cornwall, reports under date of March 1 (4 o'clock), as follows:—We have had a very quiet market this week, with prices rather easier. To-day market is flat. Following are quotations:—Blue Hills, ⅛ to ¼; Carn Brea, 12½ to 12¾; Cook's Kitchen, ½ to ¾; Dolcoath, 66 to 68; East Pool, 10¾ to 11; Killifreth, 3⅜ to 3¾; Polberro, ⅝ to ¾; South Condurrow, ⅜ to ⅝; South Crofty, 1⅞ to 2; South Wheal Frances, 1s. to 3s.; Tincroft, 10¼ to 11; West Frances, 1 to 1⅛; West Kitty, 6½ to 7; Wheal Agar, 1¾ to 2; Wheal Basset, 2½ to 3; Wheal Grenville, 14 to 14½; Wheal Kitty (St. Agnes), ½ to 5s.

Mr. Michael Williams Bawden, Mining and Assaying Offices, Liskeard, Cornwall, writes (March 1) as follows:—The mining market continues dull, in sympathy with tin and unsatisfactory result of sale on Tuesday at an average reduction of £1 15s. per ton on the last. Prices remain much the same. Following are prices:—Blue Hills, 2s. to 2s. 6d.; Carn Brea, 12¾ to 13; Cook's Kitchen, 1 to 1⅛; Dolcoath, 67½ to 68; Devon Consols, 1 to 1⅛; East Pool, 10¾ to 10⅞; Killifreth, 3⅜ to 3½; Levant, 6 to 6½; Polberro, 11s. to 12s.; South Crofty, 1⅞ to 1¾; South Frances, ½ to ¾; Tincroft, 10¾ to 11; West Frances, 1 to 1⅛; West Kitty, 6¾ to 7; Wheal Agar, 2 to 2½; Wheal Basset, 3 to 3½; Wheal Grenville, 14 to 14½.

Messrs. Abbott and Wickett, Stock and Share Brokers, and Mining Share Dealers, Redruth, write under date of Thursday, March 1:—A dull market all the week, with but little business doing. Tin cannot be produced in Cornwall at current rates, except at a loss. Quotations herewith:—Carn Brea, 12½ to 13; Cook's Kitchen, ½ to ¾; Dolcoath, 67 to 68; East Pool, 10¼ to 10⅜; Killifreth, 3½ to 3¾; Phœnix, ¼ to ½; Polberro, ⅝ to ¾; South Condurrow, ½ to ¾; South Crofty, 1¾ to 2; Tincroft, 10¼ to 11; West Frances, 1 to 1⅛; West Kitty, 6¾ to 7; Wheal Agar, 2 to 2½; Wheal Basset, 2¾ to 3½; Wheal Friendly, 2s. to 4s.; Wheal Grenville, 14 to 14½; Wheal Kitty, ⅜ to ⅝; Tin, 65½.

MANCHESTER.

Messrs. Joseph R. and W. P. Baines, Stock and Share Brokers, Queen's Chambers, 7, Market-street, write March 1 (noon):—During the major portion of the week under notice dulness has been the prevailing feature through the several departments of the railway market, and though since the approach of the virtual completion of the account the time (and to some extent business) has mended, still railways generally have an adverse balance of change comparing prices with those of a week ago. The record will probably be best understood if we briefly sketch the movements of each day. As regards rails, we will do so. On Friday last dulness, and in most cases, lower prices were the order of the day. The changes in home rails and Americans, however, were not at all severe, but Grand Trunk of Canadas and Mexican issues were distinctly depressed by pressure of sales, the fall in Mexicans being attributed to the still further decline in silver. Saturday was, as usual, dull, but home rails did not furnish any changes in prices. Americans, though fairly steady at the opening, fell off, and closed somewhat lower almost all along the list. Trunk issues and Mexicans were again sellers, and prices gave way farther. Monday was carrying-over day, and for some time the settlement engrossed attention, but weakness was evidenced on the opening of dealings for new issue. The Canadian market showed the most weakness on the large traffic decrease ($53,000) on the Canadian Pacific. Nothing of consequence occurred in Americans. Home Rails showed to some extent the easing of prices, but Mexicans were somewhat in demand and registered better prices on the ordinary and first preference, particularly the latter. On Tuesday Home Rails alone continued easy, other departments of rails strengthening a little, although there was not much business reported. There was not much of any kind of Americans till about the close, when Milwaukees were enquired for, and put their class better as a whole. Grand Trunk of Canada issues recovered some of their recent fall, the traffic return being rather over expectations. Yesterday very little was going on till somewhat late in the day, but then some animation — at any rate, comparative — ensued, and prices generally showed some improvement, which (such as it was) continued down to the close. Some fairly good traffic increases were reported in Home Rails; indeed, all were more or less better save Chathams and Midlands. This morning's opening shows—on Home Rails—slight improvements on last evening's close in about all cases where any change at all is marked. Trunk issues open lower that last night, Mexican first pref. the turn better. Americans show small fractional declines at opening. As regards the markets, other than rails, Consols are 9-16ths up on the week, quoting now at figures which are a record for a long time past. Colonial Government Stocks, &c., are again very generally better, Queensland Inscribed being prominent with rise of 2½, whilst the advances in others range from 1½ down to ½ better. Home Corporation Stocks are higher in a large number of instances (the number of changes being larger than for some time back) and in these as well as Colonials, there are no adverse changes to set against them. Foreigners are quite irregular. Higher: Egyptian Unified, 1⅛; Turkish, 1871, 1¼; Portuguese Three per Cent., ⅛; Spanish Four per Cent., ⅜; and Turks, Group IV., ⅛. Lower: Brazilian Four and a-half per Cent., 4 to 5; ditto, Four per Cent., 2½; Mexican Six per Cent., 3½; Italian Rentes, ⅛; and Argentine Six per Cent., ⅛. From the miscellaneous classes of shares a fairly moderate number of transactions is reported, and in some cases the balance of variation of quotations is a fairly distinct one (notably in coal and iron shares). Changes, however, are not, except in a few cases, of more than fractional amount.

Banks.—A very decent business has been done, Consolidated, Districts, and Salfords coming in for the chief share of attention. As regards change in quotations, Paris are conspicuous with a rise of 25s., none of the others being worthy of note.

Insurance are irregular, Equitable, Manchester Fire Positives being rather better; whilst, on the other hand, Commercial Union, Lancashire, London and Lancashire Royal and Sea mark declines ranging from ⅛ to ½, business has been somewhat restricted, and mostly confined to Manchester Fires, which have changed hands several times.

In Coal, Iron, &c., there has been much less doing than of late, and prices, where altered, are mostly lower; the most serious decline being shown in Richard Evans A, which are ¾ down on the reduced dividend announcement.

Mines.—Nothing doing here, and prices very nominal; but British South Africa Chartered, which may also be classed in this department, have changed hands several times at about last week's figures, showing on balance an advance of 1s. to 1s. 6d.

Telegraphs.—Anglo-American Preference have recovered 1 of their recent decline, and Western and Brazilian ordinary are put ½ better.

Breweries better in each case where altered, with the exception of Taylor's Ordinary, which are ½ lower, the feature, however, being the fluctuation in Allsopp's, which are 4½ up on balance.

Miscellaneous active, one of the features being the further heavy fall in Brunner Mond issues, which, though they show some recovery from the worst, mark a heavy decline on the week. Ship Canals steady and in fair demand at the quotations ruling.

Later (4 P.M.)—A good demand has prevailed for the better class home rails, and prices are higher all round. Grand Trunk issues lower on the poor monthly statement for January. In Americans little business has been done, and at the close prices show little alteration from last night's figures.

EDINBURGH.

Messrs. Thomas Miller and Sons, Stock and Share Brokers, 69, Hanover-street, Edinburgh, report as follows under date of March 1:—Prices of railway stocks have not changed much. North British

and Caledonian Deferred are slightly weaker. Canadians are depressed. Americans generally higher. In banks, British Linen has improved from 367 to 368, North of Scotland from £7 2s. to £7 5s., Union from 21¼ to 21½; Royal has declined from 229½ to 228½. In insurance shares, Liverpool, London, and Globe have risen from 44½ to 44⅝, London and Lancashire from 15⅝ to 16, English and Scottish Law Life from 11¼ to 11⅜; North British and Mercantile have declined from 36¾ to 35½, National Mortgage and Agency of New Zealand have declined from 1s. 9d. to 9d.; Edinburgh American Land from 13s. 3d. to 12s. 9d., Scottish American Investment from 79s. to 78s. 6d. Cowdenbeath Coal have advanced from 13½ to 14, Lochore and Capledrae Preference from 7 to 8. Merry and Cunningham Preference have receded from 11⅛ to 11, Steel Company from 81s. 3d. to 78s. Arizona Copper are 9d. lower at 7s. Edinburgh Tramways have risen from 5½ to 5¼. Oils very quiet. Hermand 3d. lower at 1s. 3d.; New Zealand and Australian Land 15s. lower at 100½; Swan Land and Cattle 1s. 6d. higher at 11s. 6d.; Coat's 1s. 3d. lower at 16 7-16; Union Steamship of New Zealand 2s. 6d. up at 7½.

SCOTCH MINING AND INDUSTRIAL COMPANIES SHARE MARKETS.

STIRLING.—Mr. J. GRANT MACLEAN, Stockbroker and Ironbroker (March 1), writes:—During the past week the markets have been quiet. The prospects of trade are still hopeful, and the money market easy, but a further decline in the price of silver has caused a little discouragement. Transactions now entered into are for new account, March 15.

In shares of coal, iron, and steel companies prices are steady. The dividend on Stewart and Clydesdale is announced at 7 per cent., carrying £10,000 to depreciation; at this time last year the dividend was 9 per cent. Bolckow, Vaughan are at 13½; Cairntable, 9½; Darlington Iron, 30s.; Ebbw Vale, 8¾; Marbella, 58s.; Niddrie, 46s. 6d.; Rhymney, 31s.; Steel Company of Scotland, 78s. 6d.; Sheepbridge, A, 16s.; and Wilson's and Clyde, 9½.

In shares of copper concerns there has been little business doing, and prices are easier in sympathy with the market for the metal. Arizona, Tharsis, and Tinto all lower. Mason and Barry, 45s. to 50s.

In shares of home mines there is still little business doing. Carn Brea are at 13½, Great Laxey 62s. 6d., and Leadhills 22s. 6d.

In shares of gold and silver mines a fair amount of business has been done. The demand is principally for South African gold and land shares, while Indians have declined. Montana are about 5s. 3d. The returns from the Day Dawn P.C. Company are expected to improve. Victoria (C.T.) will pay a dividend of 1s. on March 14. It is proposed to reconstruct the Mysore Harnhalli in £1 shares with 17s. paid. Nundydroog will pay a dividend of 1s. on March 20, making 2s. 6d. for last year. Lisbon-Berlyn show little alteration, although the advices from the mine are that the cyanide vats are completed, and the new mill working well, so that everything is favourable for the carrying out of the first crushing. African Gold Recovery are at 26s.; Aladdin's Lamp, 33s. 9d.; British South Africa Chartered, 30s.; Balaghat, 5s; Brilliant and St. George, 7s.; Broken Hill Proprietary, 45s. 6d.; Coromandel, 7s. 6d.; Cassel, 18s. 6d.; Consolidated Gold Fields of South Africa, 46s. 6d.; Caratal, 6d.; Cinta, 1s. 6d.; Edwin Bray, 2s. 9d.; Emma, 4½d.; Gold Fields of Mysore, 24s. 6d.; Joe's Luck, 2s. 6d.; Idaho Exploring, 11d.; Kimberley Roodepoort, 11s.; Mysore West, 2s. 9d.; Mysore Wynaad, 1s. 6d.; Nine Reefs, 1s. 9d.; Sunburst (new), 1s. 3d.; St. John del Rey, 20s. 9d.; Transvaal Estates, 11s. 9d.; Silati River, 3s. 9d.; Silver King (fully paid), 3s. 3d.; and West Argentine, 1s. 6d.

In shares of miscellaneous companies prices are steady. In oil companies shares, Broxburn are at 8½: Linlithgow, 20s.; Pumpherston, 7; and Young's 26s. Field's Candle shares offered at 5; Nobel's Explosives, 13⅜; Phospho Guano, 75s.; Roburite Explosives, 31s. 3d.; and White Lead, 5s. to 6s.

NEW METHOD OF TREATING ORES.—J. R. Moffitt, of Stockton, is the inventor of a new process of treating free-milling and refractory ores. The claims advanced for the process are; First, the rock-breaker, which breaks up the ores, then the heated trough, through which the ores pass, drying as they go through the pulveriser. It is necessary that the ores be heated to a certain degree for oxidising and releasing the precious metals. This part of the work is done in the cyclone furnace; the granulated material passing within is banked in the rotating cylinder, which is heated by the wood fire under it, in a closed housing, with air pressure, to a red heat. The inner air cylinder has a number of troughs, each having a great number of blow pipes, passing with increased motion with the outer cylinder, and having air valves to increase the air pressure in the blow-pipes. When these troughs are filling with the material of pulverised ores, and it being a red heat caused by the heated cylinder before mentioned, the blow-pipes at once cause a very high degree of heat in the material ascending, sufficient to volatilise and release from the precious metals all alloys, or whatever combination may be therein. The cyclone motion given to the materials causes at once a perfect separation, oxidising and forcing the gases to the upper tank of water, and under it to any depth desirable, the pipe being perforated, the air, &c., pass out of the water, much like a heavy mist, after the precious metals and materials, by their gravity, have passed down to the new device of the amalgamator—the material having passed through as described appears at this point very much like ashes. It is then passed on through the concentrator to a conveyor taking the tailings to the oxidiser, to again be treated. With the Moffitt system ores of the most rebellious nature are, by atmospheric pressure and the high degree of heat, profitably worked. In ordinary cases two tons per hour can be worked with this system at a less expense than any other system, and with less room and power, a simple shed being all that is necessary. The machinery is easily and cheaply transported.—*Mining and Scientific Press*,

RAILWAY RATES.—At a meeting at Newcastle, on Tuesday, of the joint committee appointed by the Northumberland Agricultural Society and the Newcastle Farmers' Club, to consider the question of railway rates, the following resolutions were adopted:—"That this committee finds that the railway companies, notwithstanding the representations which have been made to them, still continue to charge in many instances the increased rates which they imposed on January 1, 1893, and that the action of the railway companies in this respect is detrimental to the agricultural and other interests. That a tribunal should be created with power to deal with and adjudicate upon all railway rates which may be found to be the subject of complaint, and that the procedure of such tribunal should be simple, expeditious, and inexpensive."

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WESTERN AUSTRALIAN GOLD MINING.—Mr. Martin Walsh is proceeding to Western Australia in the interests of a syndicate of prominent Adelaide gentlemen to prospect the dry country beyond Hannan's Find, and known as Siberia, for gold and other metals. Mr. Walsh is well known, and has had 15 years' practical experience in mining and bush life. He leaves on Wednesday, and has arranged to have four camels at Southern Cross. At present he intends taking only an Afghan with him from this colony. Mr. Walsh has been well-sinking for the South Australian Government for the last 14 months, and has good references. The syndicate has secured his services for a period of at least 12 months, but if favourable property is found before the expiration of that time, he will return to Adelaide without delay.—*Adelaide Observer.*

THE AMERICAN MINT.—The 21st annual report of the Director of the United States Mint has just been issued from the Government Printing Office, at Washington, in that sober form invariably assumed by trans-Atlantic Governmental literature. A good deal of interesting information is scattered about the 300 pages of statistics and catalogues. At the same time, a full appreciation of the fiscal ability displayed in the composition of a work of the kind could hardly dwell with anyone who had not undergone a long and arduous education in finance, regarded from this particular point of view. Such will place a high value on the work, and will duly appreciate its completeness.

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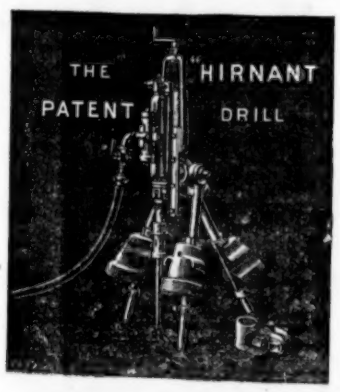

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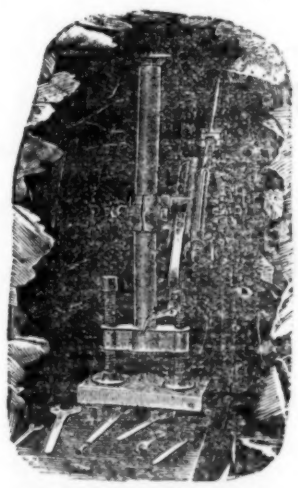

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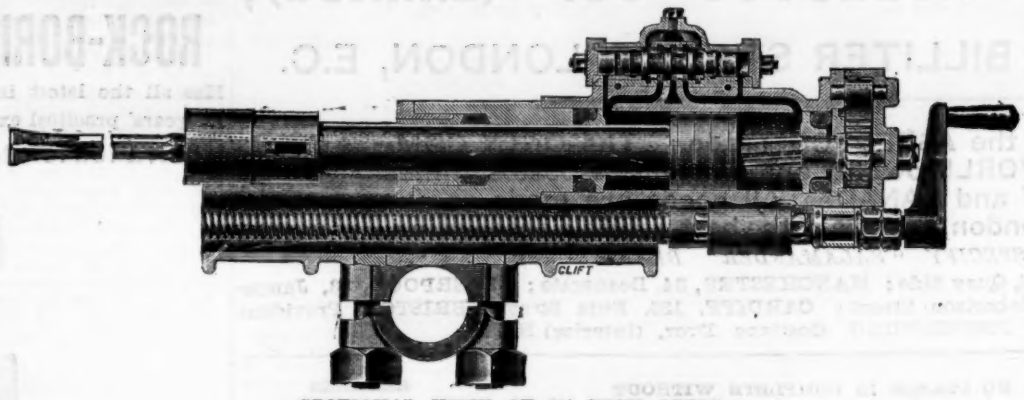

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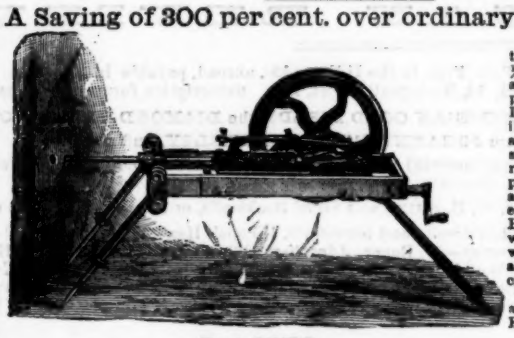

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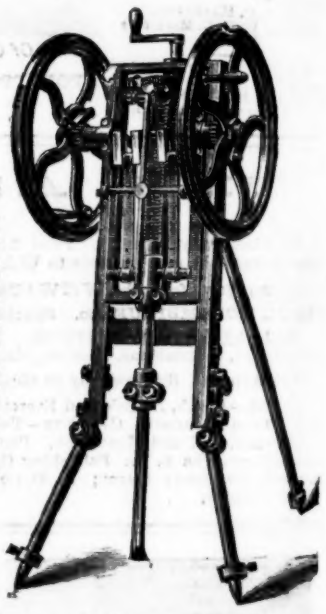

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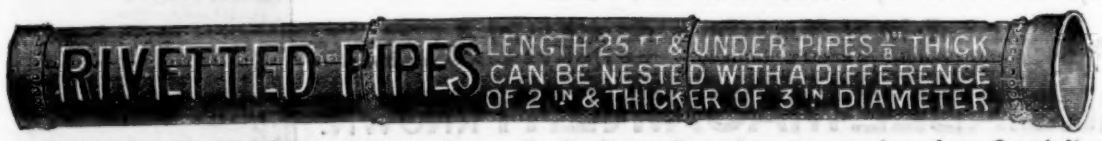

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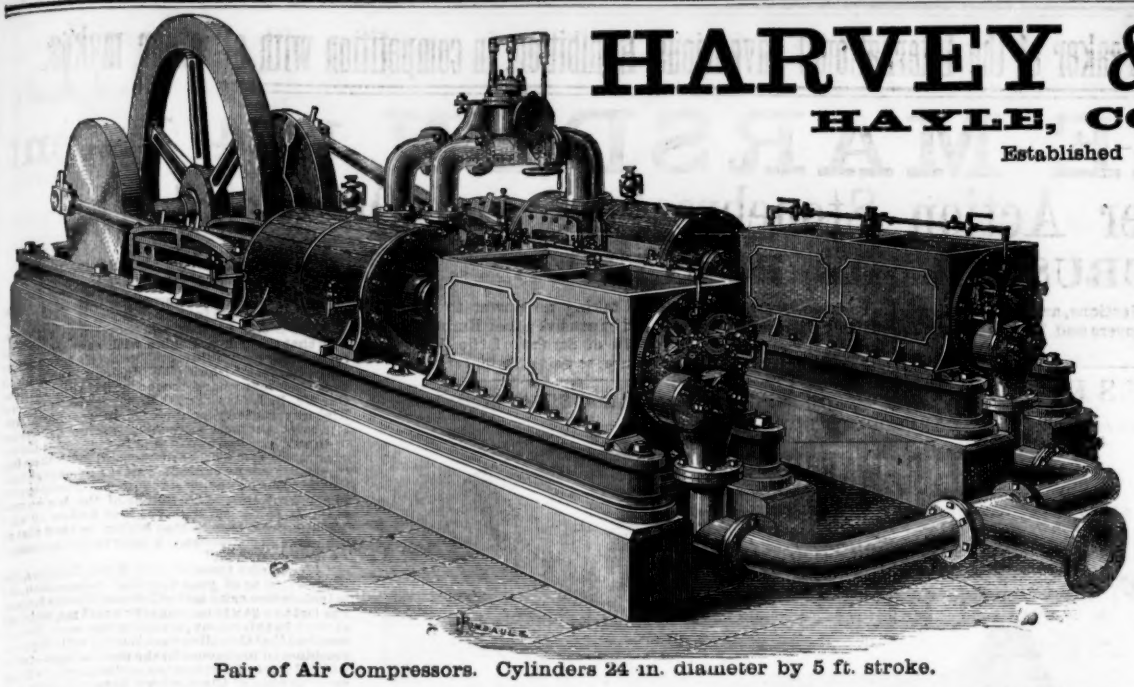

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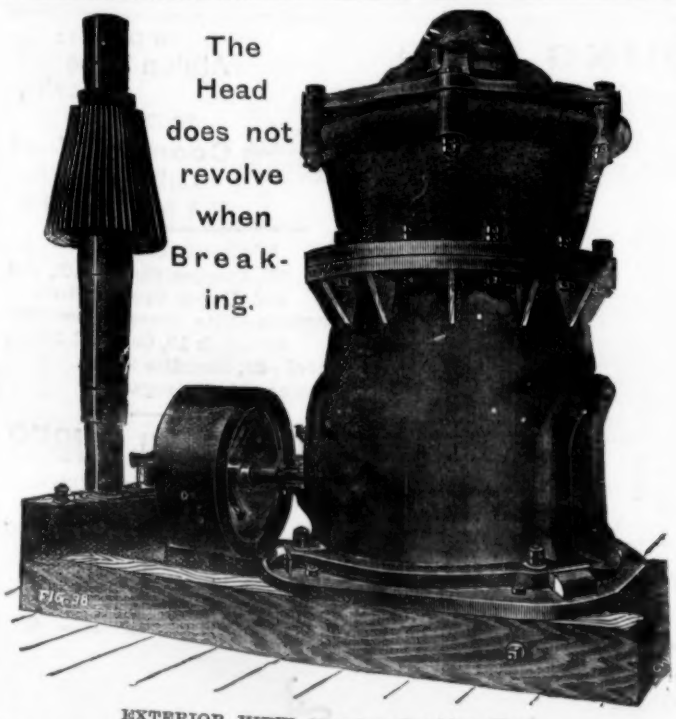

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NEW PATENT FINE CRUSHER OR PULVERIZER.

Fitted with Patent Reversible Cubing and Crushing Jaws in Five Sections, and with Surfaced Rocks, requiring no White Metal in fixing. Crucible Cast Steel Levers and Toggle Cushions, Brass or Gun Metal Bearings throughout.

Positive Draw Back Motion taking no power to work, and entirely dispensing with the old expensive Steel Embedded I.R. Spring. The motion or length of Stroke of the Jaw can be increased or decreased at pleasure, to suit any material.

OVER **5000** IN USE.

70 First-Class Gold and Silver Medals.

CATALOGUES FREE.

PULVERIZER TESTIMONIAL

"The Fine Crusher we had from you in August last is an excellent pulverizer, and rapidly reduces hard material to a fine powder."

"The Pulverizer has now been working two months, and answers its purpose most satisfactorily."

"It is with the greatest satisfaction that we write these few lines in order to acquaint you that the 12×3 Pulverizer you provided us with, has quite fully given the results you represented to us, completely reducing our material to an impalpable powder at one operation. Should you refer any one to us we should have much pleasure in recommending the machine."

"I have great pleasure in bearing testimony to the merits and capabilities of your patent combined fine crusher and sieving apparatus. I have tried it on a variety of ores and minerals, and it pulverizes them with equal success. You can put in a small paving stone and bring it out like flour."

"In reply to your favour, I have much pleasure in informing you that the 12×3 Pulveriser we had from you is giving us every satisfaction. The material we are operating on is an exceptionally hard one. I am well satisfied with its working."

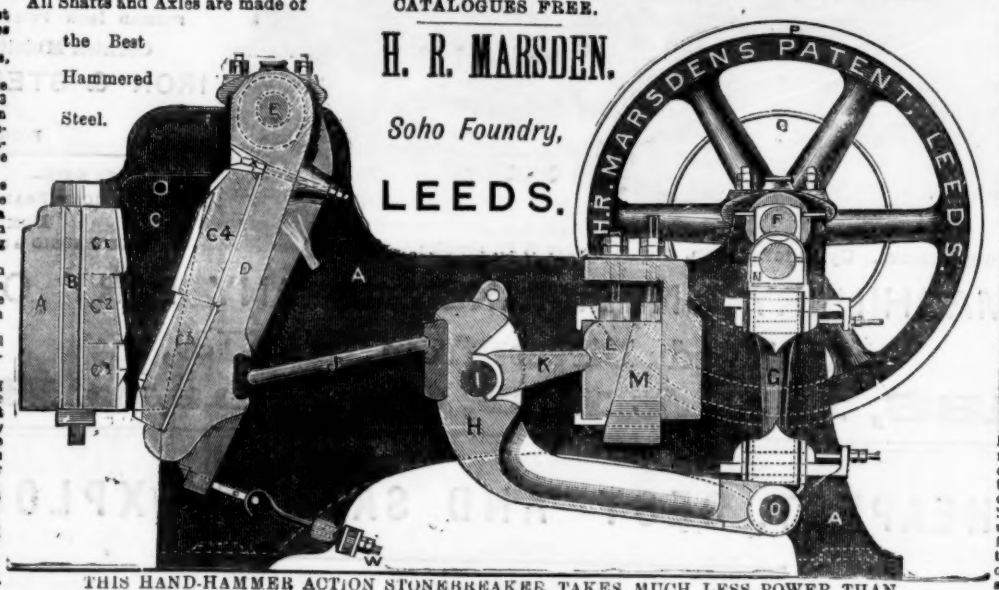
"Our experience is that the motion and mechanical arrangements of your machine are the best for pulverizing that we have ever met with"

"The reports from our mines as regards the working of your Fine Crusher (20×5) recently supplied are very favourable, although we cannot quote you exact figures. On being got into position it was tried by hand, with the result that it made short work of the biggest pieces of ore we put into the hopper. You might say how long you would take to deliver another of the same size."

"As I once before stated, your machine is a perfect pulverizer."

"I am sure the machine will be a success, and a great one, and there is any amount of demand for such a machine. We can work it with 20 lbs. of steam and our engine, which is a 12-h.p., plays with the work, in fact we run the Stonebreaker and the Pulverizer both together with 35 lbs."

All Shafts and Axles are made of the Best Hammered Steel.



THIS HAND-HAMMER ACTION STONEBREAKER TAKES MUCH LESS POWER THAN ANY OTHER EXTANT.

H. R. MARSDEN.

Soho Foundry,

LEEDS.

STONEBREAKERS AND ORE CRUSHERS. TESTIMONIALS.

"We have great pleasure in testifying to the efficiency of the 15 in. by 8 in Lever Hand Hammer Motion Stone Breaker you supplied us with. We find that our 4 h-p. Engine with ease drives it 250 revolutions per minute, and breaks six ton per hour of the hardest "Diorite" Whinstone; the sample is much before any hand-broken we have ever got done. Our Mr. P. J. GRAHAM, C.E., who was Surveyor of Highways for ten years, before joining our firm, says it is by far the most economical machine he ever had to do with; he had two of your former make, and two of another firm's make; compared with these four machines your new patent gives the following advantages:—The horse-power required to drive is exactly 40 per cent. less. The sample of the broken macadam is so far superior to that broken by other machines, and even to that broken by hand that we can make no comparison. It is by far the best sample we have ever seen."

"I now order three of your Stone Crushers, size 15 by 10, to be of your very best construction, and to include two extra sets of Jaws and Cheeks for each. The last two 24×13 machines you sent me, which are at work in this colony, are doing very well. You will soon find that the railway contractors will adopt your machines in preference to the colonial ones—two of which I have. I know other contractors have had as many as nine of them, which have not given very good satisfaction. Once they know of yours thoroughly, I believe you will do a good trade with the colonies. For reference of the high character of your constructions you can refer to me as having used them with the very best results, both in New Zealand and this colony, and much prefer them to the colonial article, both in point of construction and less liability to go out of order. The material we are crushing is very hard blue stone, for railway ballast purposes. Push on with the order as quickly as possible. I do not think it necessary to have any engineering inspection. I have brought your machines prominently under the notice of all large contractors in this colony, likewise the Government. Many of the contractors have spoken to me in reference to their capabilities, and I could only tell them that they are by far and away the best and most economical I ever used. The very fact of me having purchased seven from you at various intervals and various sizes, and two above 12 years ago, and having tried all the other makers is sufficient guarantee of the capabilities and the working of your machines. Yours in every way surpass all others."

ONLY GOLD MEDAL FOR ALLOYS INVENTIONS EXHIBITION.

"PHOSPHOR-BRONZE." (Cog Wheel Brand.)

The Best Alloys for all Wearing parts of Machinery, Bearings, &c.

BEWARE OF ALL IMITATIONS, & SPECIFY THE COMPANY'S MAKE.

BULL'S METAL, Ingots, Forgings, Castings, Stampings, Rods and Sheet. } Specially adapted for Mining Work.

The Phosphor Bronze Company, Ltd.

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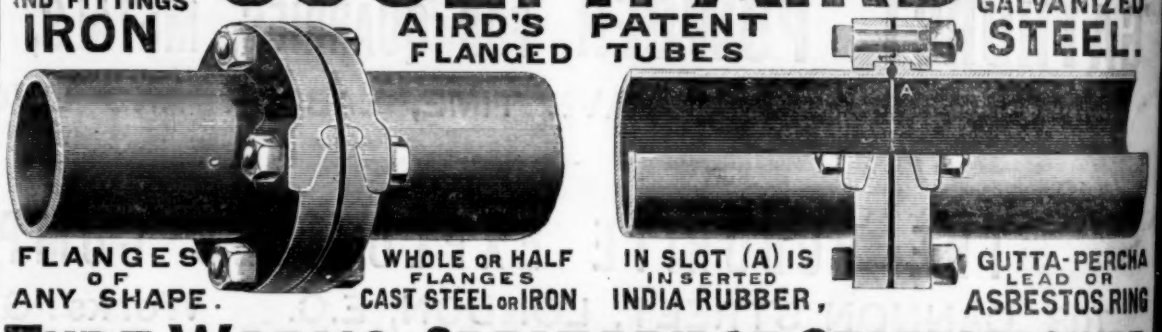
SCREWED AND SOCKETED TUBES AND FITTINGS IRON

JOSEPH AIRD

AIRD'S PATENT FLANGED TUBES

ALL SIZES, PLAIN OR GALVANIZED STEEL.

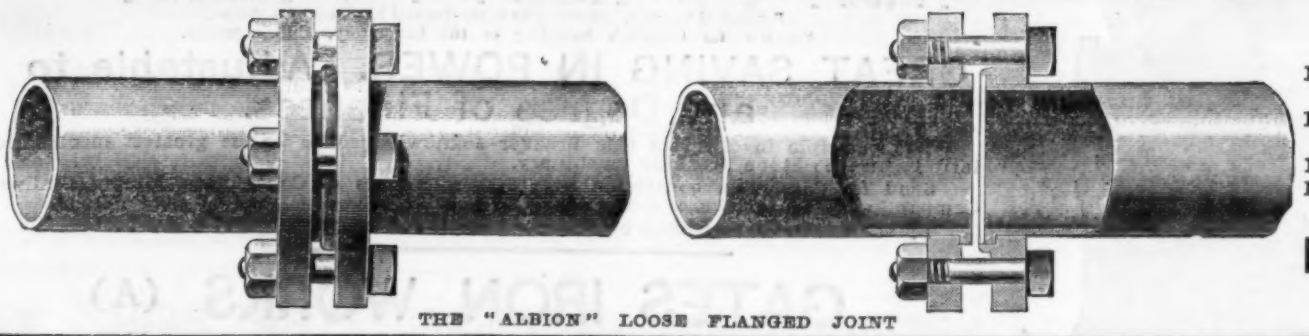


FLANGES OF ANY SHAPE. WHOLE OR HALF FLANGES CAST STEEL OR IRON. IN SLOT (A) IS INSERTED INDIA RUBBER, GUTTA-PERCHA LEAD OR ASBESTOS RING

TUBE WORKS: GREAT-BRIDGE, STAFFORDSHIRE

SPECIALITE:—ELECTRIC WELDING.

LLOYD & LLOYD



THE "ALBION" LOOSE FLANGED JOINT

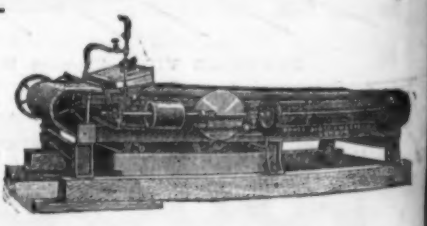
WORKS:
Albion Tube Works, BIRMINGHAM.
Coombs Wood Tube Works, HALESOWEN.

WAREHOUSES:
London—90, Cannon Street, E.C., and 167, Upper Thames Street.
Birmingham—Nile Street, Sheepcote Street, & 10, Coleshill Street.
Liverpool—63, Paradise Street.
Manchester—42, Deansgate.

IRON & STEEL TUBES
FOR ALL MINING PURPOSES.

MINING MACHINERY.

VANNERS.
JIGS.
AMALGAMATING PANS.
SETTLERS & CLEAN UP PANS.
SCREENS OF ALL KINDS.
CRUSHING ROLLS.
STAMPS.
BALL MILLS.
ROASTING AND WATER JACKET-FURNACES.
AMALGAM RETORTS, &c.
ENGINES SINGLE & COMPOUND. BOILERS OF ALL KINDS, TURBINES, &c.



SOLE LICENSEES AND MANUFACTURERS OF
"Patent" KROM ROLLS.
FOR FINE CRUSHING.
ASSAYS CONDUCTED

OFFICE:
Broadway Chambers, WESTMINSTER.
Telegraphic Address: "DONBOWES LONDON."

BOWES SCOTT AND WESTERN.

SAMPLING WORKS,
Phœnix Wharf, Church Road, BATTERSEA.

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